

Oct. 14, 1941.

J. A. McCORMICK

2,258,656

RAILWAY TRUCK

Filed Sept. 14, 1939

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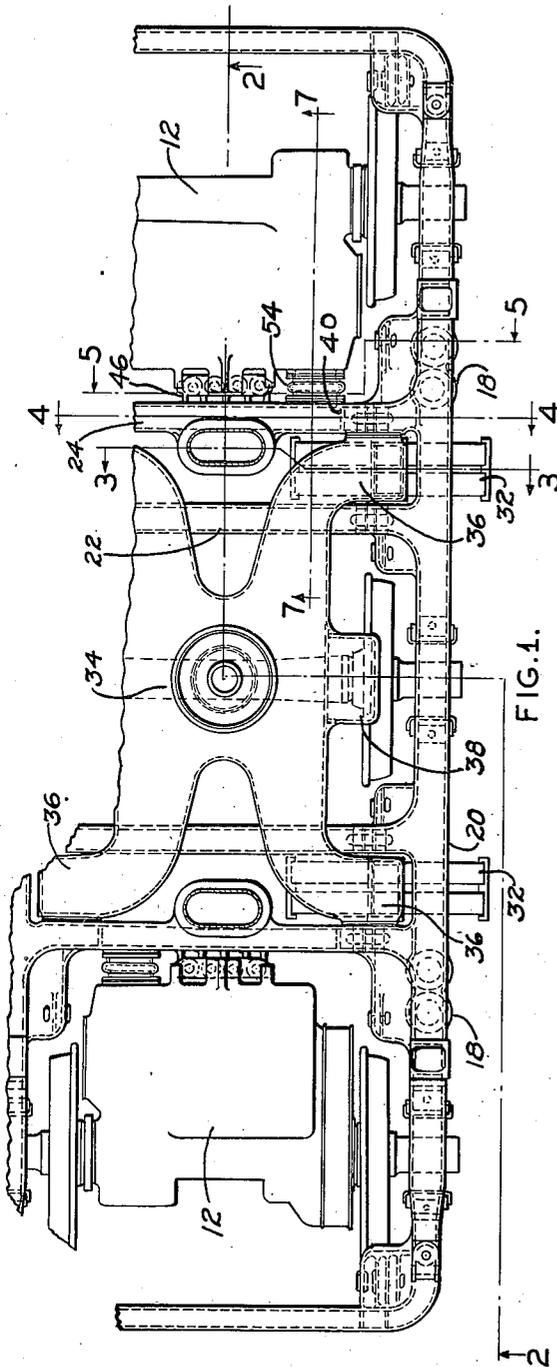


FIG. 1.

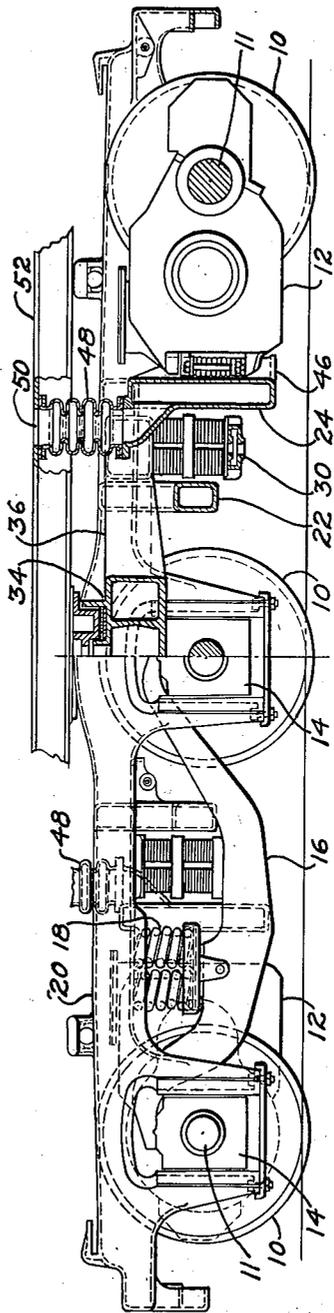


FIG. 2.

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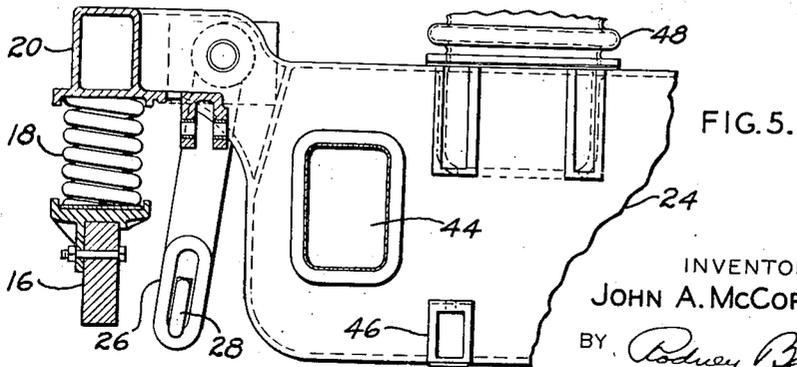
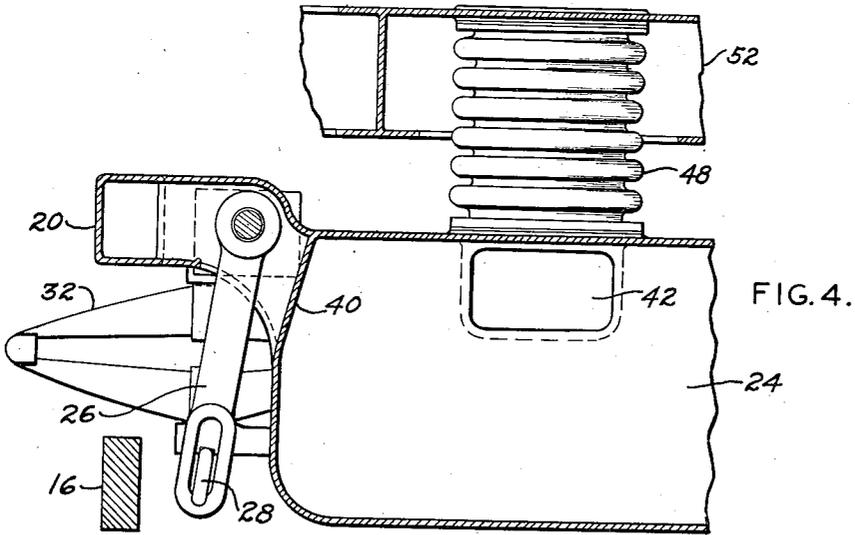
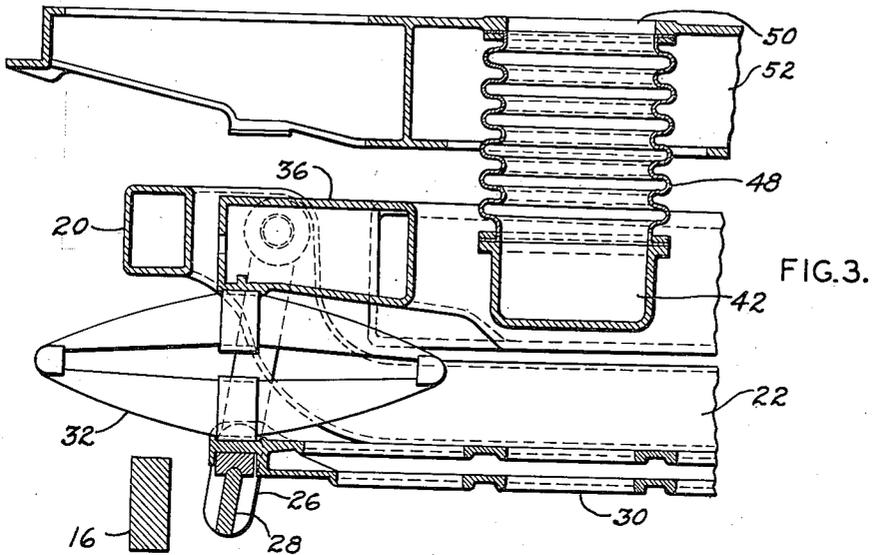
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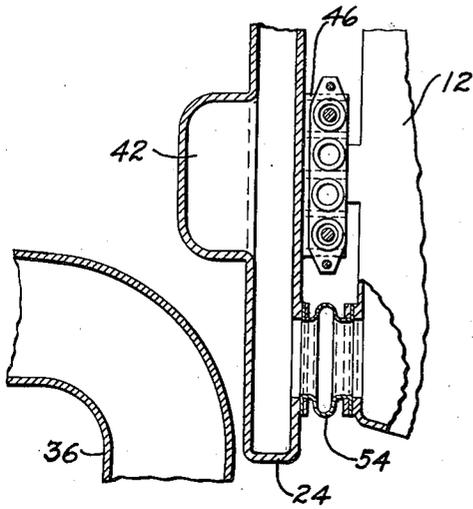


FIG. 6.

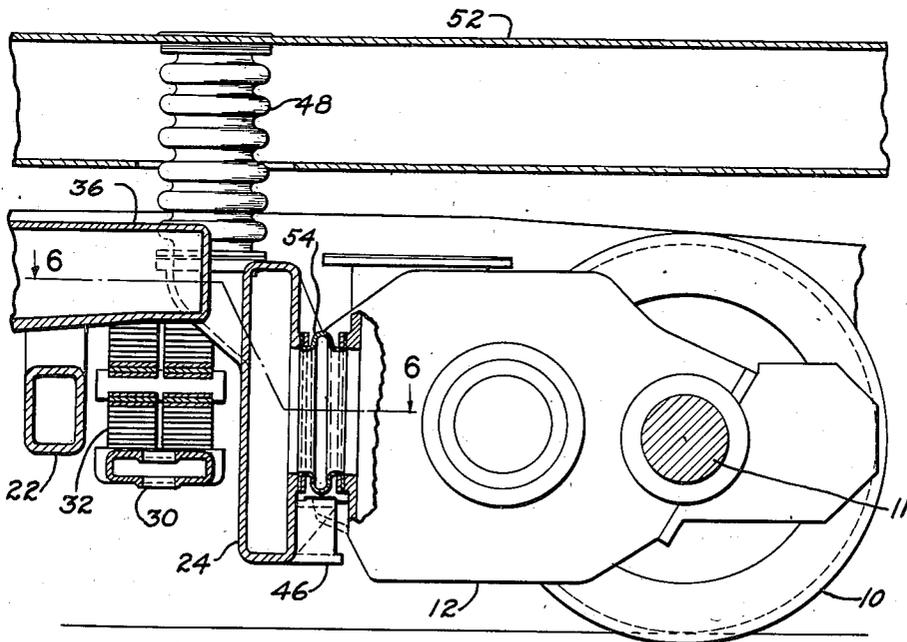


FIG. 7.

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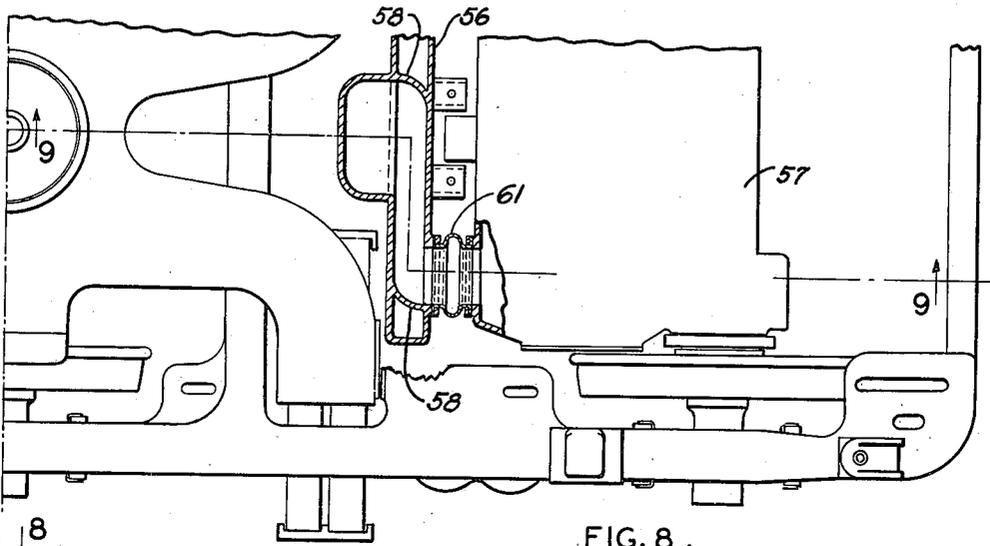


FIG. 8.

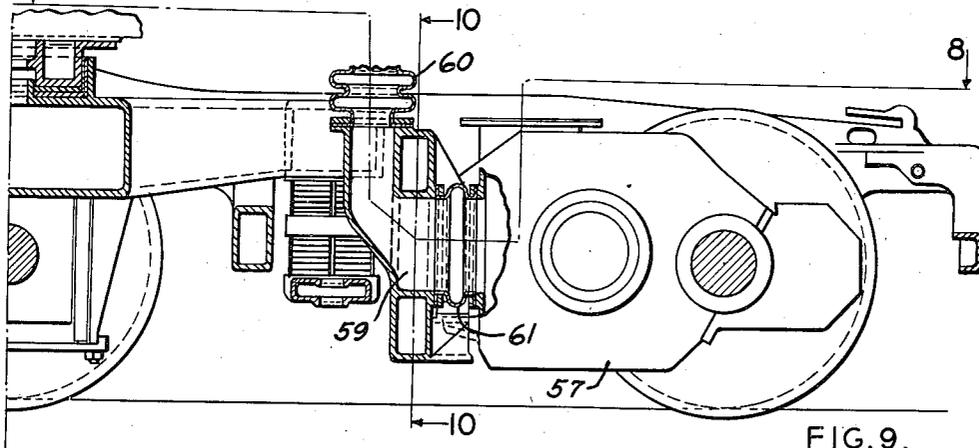


FIG. 9.

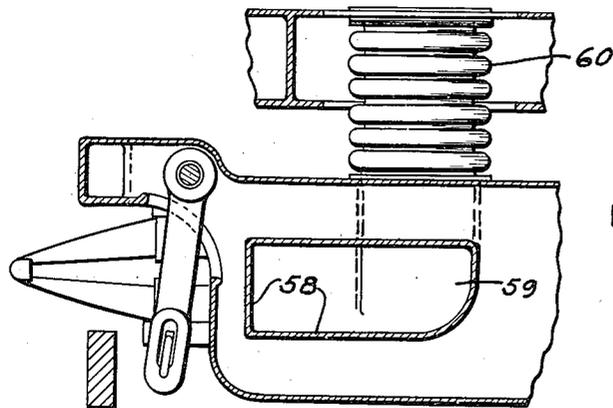


FIG. 10.

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5 Sheets-Sheet 5

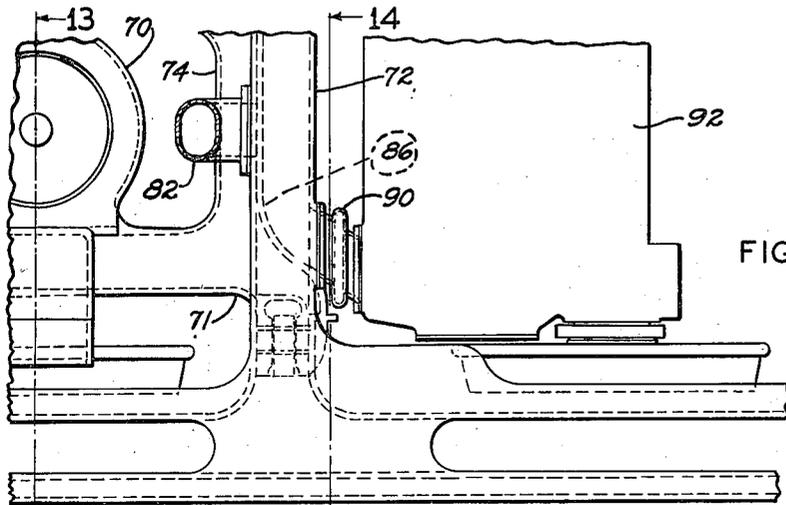


FIG. 11.

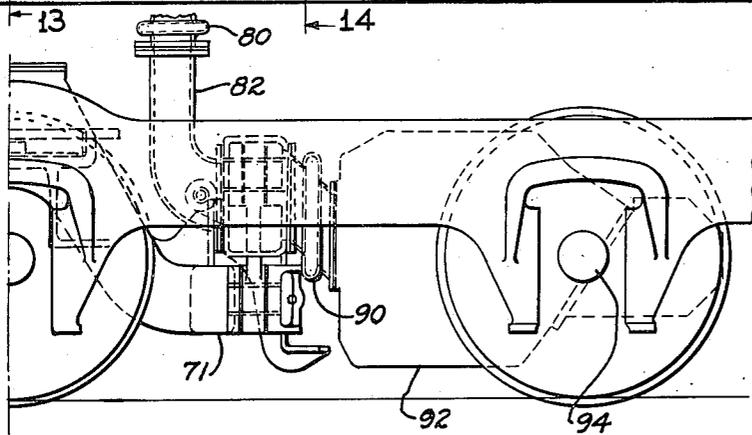


FIG. 12.

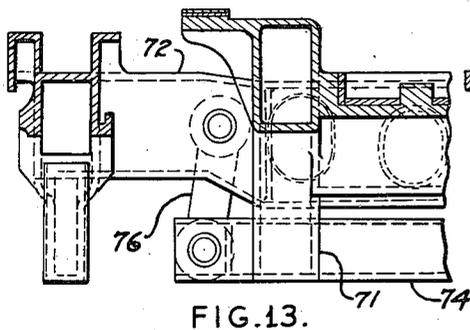


FIG. 13.

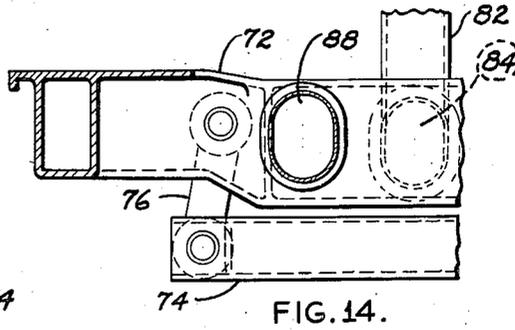


FIG. 14.

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UNITED STATES PATENT OFFICE

2,258,656

RAILWAY TRUCK

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Application September 14, 1939, Serial No. 294,812

10 Claims. (Cl. 105—59)

The invention relates to railway rolling stock and more particularly to trucks of the type which includes axle driving motors and conduits for delivering air to the motors to cool the same. Usually air compressors or blowers are carried by the vehicle body mounted on the trucks. The problem arises in conducting the air from the vehicle body to the motors in the trucks.

Heretofore such trucks have included air passageways leading from the body underframe through the truck center plate into the truck bolster and then into an air passageway formed in the frame and then to the motor housing, there being flexible connections between the bolster and the truck frame and between the truck frame and the motor housing to accommodate relative movement of these parts particularly, as is usually the case, where the bolster is mounted upon springs supported from the truck frame by swing hangers.

Supplying air to the motors in this type of construction necessitates special arrangements of the body and truck center plates and truck swing bolster as parts of the conduit with flexible connections to other truck parts and also involves increased maintenance costs due to the greater number of joints in the conduit and the rather inaccessible connections.

In this type of truck it is desirable to use elliptic springs but, to allow for the swinging of the truck bolster and to obtain sufficient clearance between that portion of the bolster forming an air passageway and the inner end portions of the elliptic springs, it has been deemed necessary to locate the swing hangers at the outer side of the frame wheel pieces and to extend the cross bolsters laterally beneath the wheel pieces and, accordingly, to utilize straight equalizers between the axles. Such outside swing hanger arrangement is not adapted for the use of equalizers depressed between their ends and the bolster springs must be located at a lower level than is necessary when inside swing hangers are used to maintain the standard heights above the rail for truck frame and center plate.

One of the objects of the present invention is to simplify and shorten the air passageway in the truck.

Another object of the invention is to simplify the construction of the truck center plate and swing bolsters in a truck with air cooled motors.

Another object is to provide for inside swing hangers in such a truck.

Another object of the invention is to reduce the weight of such a truck.

Another object of the invention is to provide ample clearance between the bolster springs and the rail and other parts of such a truck.

Another object of the invention is to provide a more direct air passageway between the compressor in the superstructure and the truck motors and, at the same time, locate the air inlet to the truck close to the center plate so that lateral movement due to the relative lateral motion of the body and truck plus the swivel action of the center plate will not affect the conduit.

These general objects and other more specific objects as will appear from the following description are attained in the structures illustrated in the accompanying drawings in which—

Figure 1 is a top view of one longitudinal half of a six wheel motor truck embodying one form of the invention.

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

Figures 3, 4 and 5 are vertical transverse sections taken on the corresponding section lines of Figure 1 and showing a portion of the vehicle underframe.

Figure 6 is a horizontal section taken on line 6—6 of Figure 7.

Figure 7 is a longitudinal vertical section taken on line 7—7 of Figure 1.

Figure 8 is in part a top view of one quarter of a truck embodying another form of the invention, and in part a horizontal section taken on line 8—8 of Figure 9.

Figure 9 is a vertical section taken on line 9—9 of Figure 8.

Figure 10 is a vertical transverse section taken on line 10—10 of Figure 9.

Figure 11 is a top view of one quarter of a truck embodying another form of the invention.

Figure 12 is a side elevation of the structure shown in Figure 11.

Figures 13 and 14 are vertical transverse sections taken on lines 13—13 and 14—14 of Figure 11.

The truck illustrated in Figures 1 to 7 inclusive includes wheels 10, axles 11, motors for driving the end axles, the housings of the motors being indicated at 12, journal boxes 14, depressed equalizers 16, and coil springs 18 seated on the equalizers and supporting the truck frame.

The truck frame includes wheel pieces 20, resting on truck springs 18, and transverse transoms 22 and 24. The entire center portion of transom 22 is depressed as shown in Figure 7 while the top of the center portion of transom 24 is depressed slightly and the transom depth is

increased as shown in Figures 4, 5 and 7. Suspended from the end portions of the transom members are pairs of swing hangers 26, the lower ends of each pair being connected by a cross bar 28. A spring plank 30 extends between the cross-bars 28 at opposite sides of the truck. Elliptic springs 32 are positioned upon spring plank 30 and mount the truck bolster comprising a central portion provided with a center plate 34, arms 35 extending longitudinally of the truck and turned outwardly to bear upon elliptic springs 32 between transoms 22 and 24. Side bearing brackets 38 project outwardly and upwardly from the center portion of the bolster.

The general arrangement of the parts as described is well known in the art although some of the parts possess novel details.

Transom 24 is of hollow construction and has end walls 40 (Figure 4) to form a closed container. Transom 24 is also provided with an inlet opening 42 in the side wall nearest transom 22 and an outlet opening 44 on the opposite wall.

The motors are supported on axles 11 and upon spring brackets 46 on the adjacent walls of transoms 24 in a well known manner whereby the inner end of the motor may move vertically relative to the truck frame. Bolster 34—36—38 moves vertically relative to the truck frame due to the action of springs 32, and moves transversely of the truck frame due to the swinging action of hangers 26.

A bellows type flexible air conduit 48 connects an air supply outlet 50 in the body underframe 52 and the inlet opening 42 in transom 24. A flexible air conduit 54 connects the outlet opening 44 in transom 24 to motor housing 12. The air passageway from body underframe 52 does not involve the bolster, thereby simplifying the bolster construction.

Air conduit 48 is of sufficient length and flexibility to compensate for lateral movement due to the swing motion of the truck plus the swivel action of the center plate but is close to the center plate to minimize the relative movement of the ends of the conduit due to the relative movement between the body underframe and the truck.

Air conduit 54 is sufficiently flexible to accommodate the vertical and angular motion of motor housing 12 relative to transom 24.

Figures 8, 9 and 10 illustrate a form of the invention in which the general arrangement corresponds to that in the structure previously described but the transom 56 adjacent the motor housing 57 is provided with transverse webs 58 forming a passageway 59 extending directly between the two side walls of the transom. Inlet conduit 60 leads from the source of air supply on the body directly to one end of passageway 59 and flexible conduit 61 leads from the other end of passageway 59 directly to the motor housing 57. This arrangement provides a short, direct air conduit through the transom reducing the volume of air received in the transom and the development of any eddy currents in the passage of the air to the transom.

Figures 11-14 illustrate another form of the invention in which each arm 71 of the swing bolster 70 is directly connected to a single swing hanger 76 pivotally suspended from the transom 72. The ends of arms 71 are braced by a cross piece 74. The conduit from the body comprises a flexible section 80 connected to a rigid member 82 mounted on transom 72 which has an inlet opening 84 in one wall and elements 86 forming a

passageway leading to a discharge opening 88 in the opposite wall. A flexible conduit 90 leads from opening 88 to the motor housing 92 supported on the axle and truck frame 94.

In the three forms of the invention illustrated the air passageway from the body underframe to the motors is independent of the center plate and swing bolster and is formed in part by the transom.

All modifications of the invention illustrated embody the basic idea of directly connecting the air supply to the motors through the truck transom and placing the air inlet in close relation to the truck center plate.

While the structure illustrated in the drawings is embodied in six wheel trucks it may also be embodied in four wheel trucks with swing bolsters, with slight modification of the transom.

Other variations in the structure may be made by those skilled in the art without departing from the spirit of the invention and the exclusive use of such modifications as come within the scope of the claims is contemplated.

What is claimed is:

1. In a railway truck, a frame including a hollow transverse transom, swing hangers pivotally suspended from said frame, leaf springs extending transversely of the frame and mounted on said swing hangers, a superstructure-supporting bolster having a center plate portion and arms extending therefrom longitudinally of the truck and spaced apart transversely of the truck with their ends resting upon said leaf springs at one side of said transom, an air conduit structure at the bolster side of said transom and positioned between said bolster arms and between the inner ends of said springs and arranged to conduct air from the superstructure to the interior of said transom independently of said bolster, and an air conduit structure leading from the opposite side of said transom for connection to an axle driving motor between said transom and the end of the truck.

2. A truck as described in claim 1 in which truck frame includes wheel pieces and the swing hangers are pivotally suspended from the frame at the inner sides of said wheel pieces.

3. In a railway truck, a frame including a hollow transverse transom, swing hangers pivotally suspended from said frame, a bolster having a center plate portion for supporting vehicle superstructure and having arms extending from said center plate portion towards one end of the truck and then diverging from each other and supported at their ends by said swing hangers, an air conduit structure at the bolster side of said transom and positioned between said bolster arms and arranged to conduct air from the vehicle superstructure to the interior of said transom, and an air conduit structure leading from the opposite side of said transom for connection to an axle driving motor between said transom and the end of the truck.

4. A truck as described in claim 3 in which the air conduit structure leading from the transom to the motor is adjacent to the end of one of the bolster arms.

5. In a railway truck, a frame including spaced transom members extending from side to side of the frame, a bolster movable transversely of said frame and having a center plate portion for supporting the vehicle superstructure and having arms extending from said center plate portion towards one end of the truck and passing over one of said transom members and supported by said

frame between said members, the other of said members being hollow and forming an air passageway and having an upwardly facing air inlet positioned between said bolster arms and spaced from said center plate portion, an air conduit arranged to lead air directly from superstructure carried by the truck to said inlet independently of said bolster, and an air conduit arranged to discharge air from said hollow transom member to an axle driving motor.

6. In a railway truck, a frame including spaced transom members extending from side to side of the frame, a bolster movable transversely of said frame and having a center plate portion and an extension therefrom overlying one of said transom members and supported by said frame between said members, the other of said members being hollow and forming an air passageway and having an air inlet conduit between it and said bolster and separate from the latter and leading downwardly between said transom members into said hollow member, and an air conduit arranged to discharge air from said hollow transom member to an axle driving motor.

7. In a railway truck, a frame including a transverse transom, swing hangers suspended from said frame, a bolster including a center plate portion and a longitudinal extension therefrom and a transverse member beneath said transom and connected to said hangers whereby the bolster is carried by the frame, there being air inlet conduit structure leading downwardly between said transom and center plate portion and into the bolster side of said transom, and air outlet conduit structure leading from the opposite side of said transom to a truck motor.

8. In combination in a railway vehicle, a body underframe and a swivel truck supporting the same, said truck having three axles, a truck frame supported therefrom and including a pair of transverse transoms extending from side to side of the frame between the center axle and each end axle, a lateral motion bolster with a body supporting center plate over the central axle, said bolster including arms extending from said center plate longitudinally of the truck and having cross bolsters at their ends, each positioned between one of the pairs of transverse transoms and there supported from said frame, a motor and housing on an end axle, an air conduit leading directly from the underframe to the transom nearest said end axle and being independent of the other transom of that pair and of

said bolster, and an air conduit leading from said first-mentioned transom to discharge air to the adjacent motor housing.

9. In a railway vehicle, a body underframe and a swivel truck supporting the same, said truck having three wheeled axles, a truck frame supported on said axles and having a transverse transom located substantially midway between an end axle and the center axle, a motor housing connected to said end axle and supported thereby and by said transom, a bolster having a body supporting center plate part located immediately above said center axle and having parts extending from said center plate part towards said transom, elements supporting said latter mentioned bolster parts on said frame and providing for lateral motion of said bolster relative to said frame, said transom having an air passageway with an inlet and an outlet opening, and an air conduit formed separately from said bolster and spaced throughout its length from said bolster parts and said elements and leading from said underframe to said transom inlet opening, said transom outlet opening being arranged to discharge air to said motor housing, portions of said bolster parts and said conduit lying in the same general vertical plane extending transversely of the truck.

10. In a railway vehicle, a truck comprising three wheeled axles, a truck frame having longitudinally spaced transoms, each transom being located substantially midway between an end axle and the center axle, a motor housing connected to each end axle and supported by the same and by the adjacent transom, a truck bolster having a center plate between said transoms, elements supporting said bolster on said transoms and providing for relative lateral motion of said bolster and frame, said bolster center plate being positioned above the center axle and the bolster including parts extending longitudinally of the truck at each side of the center axle towards said transoms, said transoms having air passageways with inlet and outlet openings, a vehicle body underframe mounted on said center plate, and air conduits leading downwardly from points on said underframe lying in the same general vertical transverse plane as portions of said bolster parts to said transom inlet openings, independently of said bolster, and said transom outlet openings being arranged to discharge air to said motor housings.

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