Sept. 10, 1957 G. F. COUCH 2,805,630

QUICK WHEEL CHANGE TRUCK

Filed Jan. 7, 1952 2 Sheets-Sheet 1

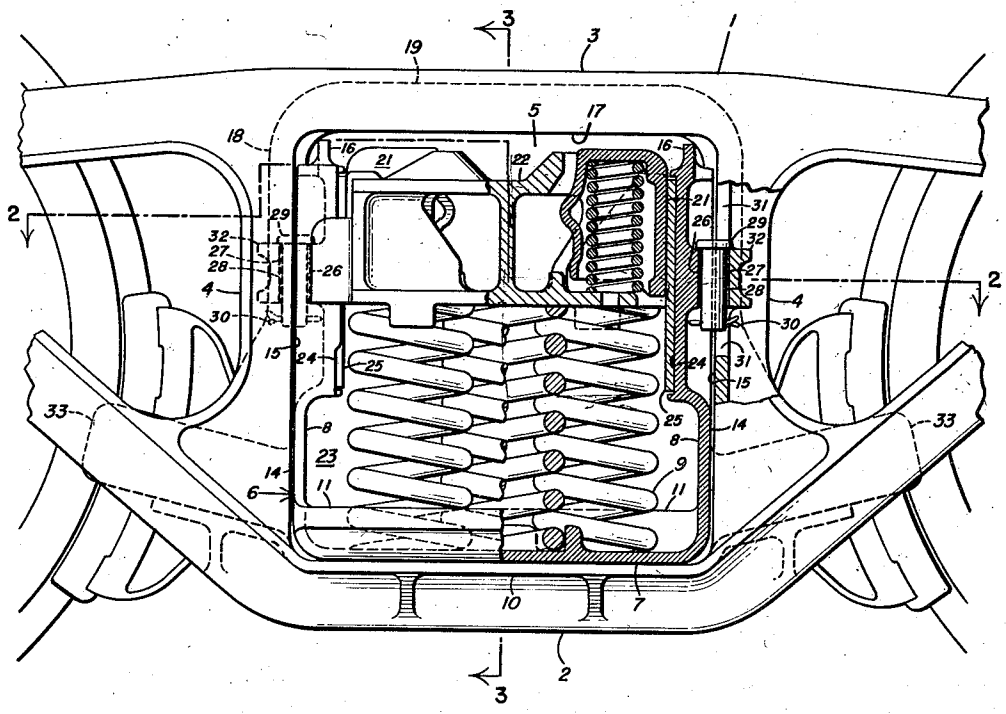


FIG. 1

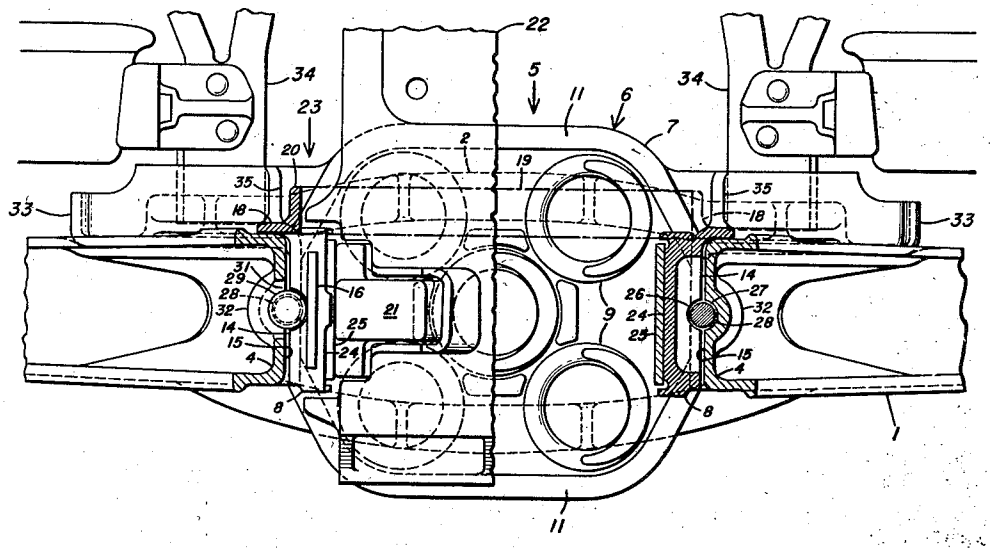


FIG. 2

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QUICK WHEEL CHANGE TRUCK

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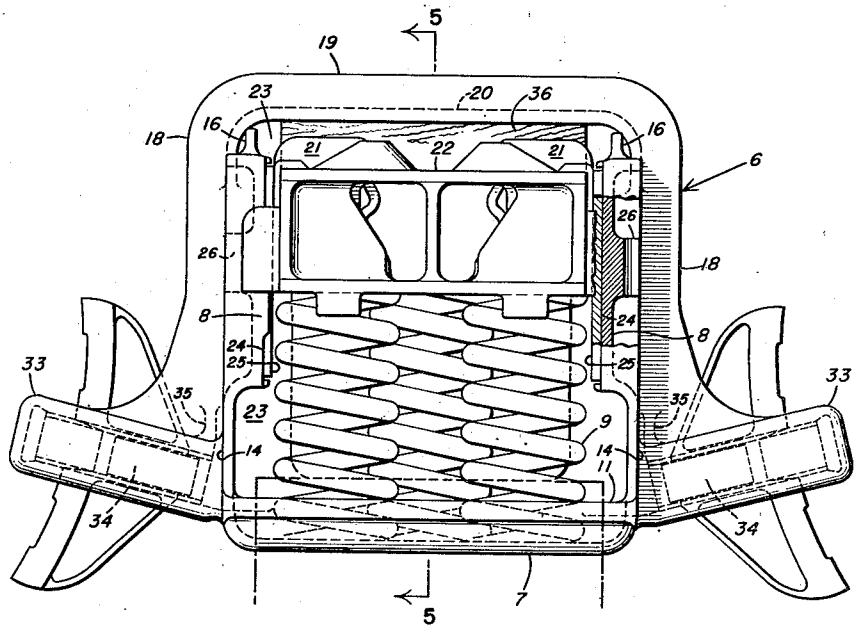


FIG. 4

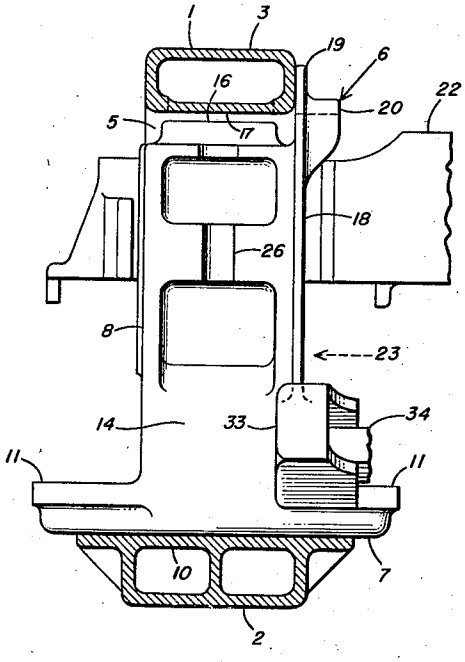
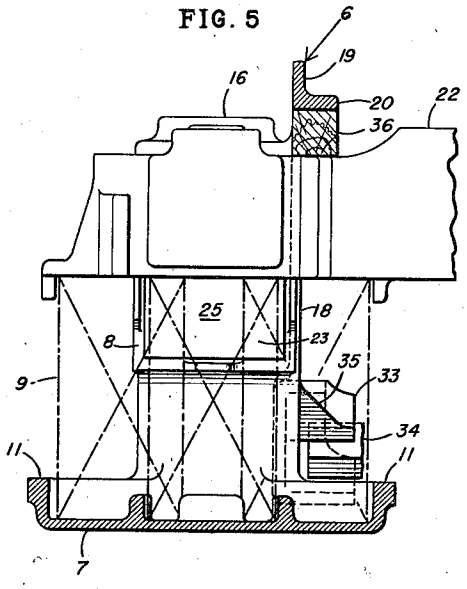


FIG. 3

FIG. 5



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QUICK WHEEL CHANGE TRUCK

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15 Claims. (Cl. 105—197)

This invention relates to railway truck and has for its primary object to provide an improved connection between bolster and side frame which is particularly suited for a quick wheel change.

Another object of the invention is to provide an improved railway truck in which the bolster and side frame are interlocked through a subframe seatable in an opening in the side frame, the subframe serving to mount as a unit, the supporting spring group and brake rigging, as well as the bolster.

An additional object of the invention is to provide an improved subframe for releasably interlocking a bolster and other structure with a side frame wherein the subframe assembly is slidable without elevation from the side frame, permitting the side frame to be disassociated from the railway truck for a quick wheel change without disturbance of the assembled relation of the elements normally supported thereon.

A further object of the invention is to provide a subframe interlock between a side frame and the side frame supported members of a railway truck wherein the interlock between the subframe and the side frame is such as to permit the frame to be disassociated without change in their elevations.

Other objects and advantages of the invention will appear hereinafter in the detailed description, be particularly pointed out in the appended claims and illustrated in the accompanying drawings, in which:

Figure 1 is a fragmentary side elevational view of a railway truck embodying the invention, portions being broken away and shown in section to more clearly illustrate certain of the details of construction;

Figure 2 is a horizontal sectional view taken along the lines 2—2 of Figure 1;

Figure 3 is a vertical sectional view taken along the lines 3—3 of Figure 1;

Figure 4 is a side elevational view of the subframe assembly with the side frame and brake shoes removed; and

Figure 5 is a vertical sectional view taken along the lines 5—5 of Figure 4.

Referring now in detail to the drawings in which like reference characters designate like parts, the improved railway truck of the present invention is comprised of a side frame 1 formed of a tension member 2 and a compression member 3, connected intermediate their ends by spaced uprights or columns 4 and defining with the columns an opening 5.

In a conventional truck, the several side frame-supported elements are assembled separately and each must be detached individually when the side frame is removed for a wheel change or like purpose. Not only is this time consuming, but it almost invariably requires realignment of the elements when the side frame is replaced. In the railway truck of the present invention, these difficulties are circumvented by mounting the side frame-supported elements on a common member separate from the side frame and releasably interlocking them as a unit to the side frame through that member.

To the above end, the side frame 1 does not have the usual mountings for the side frame-supported elements of the truck. In lieu thereof, its opening 5 is designed to receive a subframe or frame or interlocking member 6 on which the several elements are adapted to be mounted.

As will later become apparent, the subframe is particularly designed to be slid horizontally into the side frame 1 without raising or lifting either member. To facilitate such assembly, both the opening 5 and the subframe preferably are substantially rectangular and have confronting or engaging faces which are relatively smooth and devoid of projections.

The subframe 6 is of box-shape and comprised of a base or bottom wall 7, adapted to seat and be supported on the tension member 2 between the uprights 4. Upstanding from the ends of the base 7 and confronting and engaging the uprights 4 are a pair of longitudinally spaced guide columns or side walls 8. The base 7 is designed to accommodate a group of bolster-supporting springs 9 and in the illustrated embodiment its sides thus extend over or overhang the corresponding sides of the upper plate or wall 10 of the tension member 2. Both for strength and to pocket the springs 9, the edges of the base, intermediate the guide columns 8, are bounded or rimmed by an upturned lip or rim 11 which merges at its extremities with the columns.

With the base 7 and the guide columns 8 preventing downward and longitudinal movement of the subframe 6 relative to the side frame 1 by their engagement with the confronting longitudinally facing walls 14 and 15, of the tension member 2 and uprights 4, respectively, upward movement is prevented by stops or lugs 16, surmounting or topping the guide columns, and disposed to abut or engage the lower face 17 of the compression member 3 over the area in which the latter merges with the uprights 4. The lugs are disposed transversely of the subframe and within the limits imposed by the compression member, are of substantial extent to minimize wear.

Adapted to be inserted or assembled from the inboard side of the side frame 1, the portion of the subframe 6 receivable within the opening 5 is limited to the base 7 and guide columns 8 by a preferably planar vertically disposed peripheral flange or skirt 18. This skirt is formed with and projects outwardly from the inboard edges of the outer longitudinally facing walls or faces 14 of the guide columns 8, and overlies and engages the inboard side of the side frame 1 adjacent the opening 5. With the relatively wide bearing area provided between the base 7 and the upper plate 10 of the tension member 2, it has been found sufficient to limit contact with the inboard side of the side frame to the upper portion of the subframe without affecting the interlock to be hereinafter described. The skirt 18 therefore terminates at its lower ends above the base 7 and intermediate the ends or vertical limits of the guide columns 8. Thereabove, the skirt is continuous and bridges or connects and closes the otherwise open upper end of the subframe. When the subframe and side frame are assembled, this bridging portion 19 of the skirt abuts the inboard face of the compression member 3. For strengthening the skirt 18 between the guide columns 8, the bridging portion 19, which forms the top wall of the subframe, preferably is L-shaped and has an inboard or inwardly directed flange 20 projecting from its lower or inner edge and disposed substantially normal to the plane of the skirt.

Interiorly, the configuration of the subframe 6 is determined by the type of bolster with which it is to be assembled. For the snubbed truck of the illustrated embodiment in which friction shoes or other snubbing means 21 are housed in the ends of a bolster 22, the window or bolster opening 23 defined by the guide columns 8 and base 7 is enlarged adjacent the base for the reception of the bolster. Thereabove, the opening is restricted by insetting the guide columns to provide bearing surfaces 24 for guiding the movements of the bolster under load. To minimize wear there is preferably interposed between each of the bearing surfaces 24 and the confronting side of

the bolster, a wear plate **25**, removably attached to the guide columns by welding or like means.

Constructed in the above manner, the only movement of the subframe not inhibited when it is seated in the side frame, is inboard. To eliminate such movement, as well, when the subframe and side frame are assembled and thus effectively to interlock these members, is the purpose of the locking arrangement shown best in Figure 1. In this arrangement, the outer wall **14** of each of the guide columns **8**, confronting the associated upright **4**, is slotted intermediate the vertical limits of the bearing surface **24** to provide a vertically disposed slot or groove **26**. The confronting wall **15** of the associated upright **4** has a complementary slot or groove **27** of corresponding disposition and configuration. Together, the slots form an aperture or seat **28**, preferably cylindrical, for the reception of a removable locking pin or element **29**. This pin is headed at its upper end and usually will be fitted with a cotter pin **30** below the aperture **28** to prevent accidental displacement. For insertion of the locking pin and to accommodate its head and cotter pin, the outer or upright-confronting wall **14** of each guide column is recessed above and below the slot **26**. In each of the uprights **4**, the same result is obtained by forming openings **31** in its inner wall **15** above and below the slot through the upper of which openings the locking pin can readily be inserted in its seat. With the wall **15** so perforated, the portion in which the slot **27** is formed is preferably a reinforced horizontally disposed web **32** connecting the inboard and outboard sides of each upright.

In addition to the spring group and bolster, the subframe or box member **6** may also mount the brake-rigging. The particular mounting employed will depend on whether the truck is to be used with a suspended or unit brake beam, requiring brake hanger brackets and brake beam guides, respectively. Either or both mountings may be cast integrally with the subframe. The illustrated embodiment of the subframe is provided with integral beam guides **33** for unit brake beams **34**. As shown, these guides can conveniently be formed as wings projecting from the sides of the subframe and their connection to the subframe can be reinforced by webs **35** forming part of the skirt **18**.

With the portion of the subframe contained or seated in the opening **5** in the side frame closed at its upper end only by the compression member **3** and the springs **9** separated from the tension member **2** merely by the thickness of the base **7**, the bolster opening **23** affords adequate space for accommodating the conventional spring and bolster arrangement without restricting the height and travel of the springs and without increasing the overall vertical dimension of the side frame. At the same time, the sub-frame, spring group, bolster and brake rigging are made detachable as a unit from the side frame merely by removal of the locking pins **29**. Since the locking pins are the sole interlocking members between the subframe and the side frame, the subframe unit or assembly is enabled to be slid horizontally from the side frame without raising or lifting either the subframe or the side frame, and thus without disturbing the assembled relation of the side frame-supported elements. It is therefore only necessary to relieve the side frame of the weight of the car, usually by blocking under the bolster, to enable the side frame to be slid horizontally off the subframe. While the weight of the car is so transferred, it is desirable that the springs **9** be maintained under normal compression so that the height of the bolster above the base member **7** will be maintained, facilitating reassembly of the unit with the side frame. This can readily be accomplished by slipping or inserting a wooden block **36** between the bolster and the inwardly directed flange **20** of the bridging member **19** before the side frame is detached or removed. After the side frame has been detached, the subframe and elements mounted thereon retain their assembled

relation, as shown in Figure 4, the brake shoes there having been removed for a wheel change.

From the above detailed description it will be apparent that there has been provided an improved railway truck in which, by the use of a subframe interlockable with the side frame, the several side frame-supported elements of the truck are enabled to be maintained in assembled relation when a side frame is removed, thus permitting rapid removal of the side frame for a quick wheel change or like purpose. It should be understood that the described and disclosed embodiment is merely exemplary of the invention and that all modifications are intended to be included which do not depart either from the spirit of the invention or the scope of the appended claims.

Having described my invention, I claim:

1. In a railway truck, a side frame comprising compression and tension members and spaced uprights defining with said members a substantially rectangular opening, a subframe seatable in said opening on said tension member, and locking means engageable with and vertically releasable from said side frame and subframe when said subframe is seated in said opening for interlocking said frames against relative movement transversely of said side frame.

2. In a railway truck, a side frame comprising compression and tension members and spaced uprights defining with said members a substantially rectangular opening, a frame member seatable in said opening, and locking means engageable with said frame member and side frame intermediate vertical limits of said opening and vertically releasable therefrom when said frame member is seated in said opening for locking said frame member against movement transversely of said side frame.

3. In a railway truck, a side frame comprising compression and tension members and spaced uprights defining with said members a window opening, a rectangular frame member seatable in said opening on said tension member, said frame member within said opening having an open upper end and defining with said compression member a bolster opening, and vertically directed means engageable with said frame member and side frame and releasable when said frame member is seated in said opening for releasably interlocking said frame member against transverse movement relative to said side frame.

4. In a railway truck, a side frame comprising compression and tension members and spaced uprights defining with said members a window opening, a frame member seatable in said opening on said tension member, said frame member within said opening having an open upper end and defining with said compression member a bolster opening, means on said frame member bridging said open upper end outwardly of and above said side frame opening, and means releasable when said frame member is sealed in said opening for releasably interlocking said frame member against movement transversely of said side frame.

5. In a railway truck, a side frame comprising compression and tension members and spaced uprights defining with said members an opening, an interlocking member seatable in said opening, said interlocking member comprising a base, a pair of spaced guide columns upstanding from said base and confronting longitudinally facing walls of said uprights, bridging means connecting upper ends of said uprights and disposed outwardly of and above said side frame opening, and locking means engageable with and vertically releasable from said guide columns and uprights for releasably interlocking said interlocking member against transverse movement relative to said side frame.

6. In a railway truck, a side frame comprising compression and tension members and spaced uprights definings with said members an opening, a rectangular interlocking member seatable in said opening, said interlocking member having portions engageable with said

tension member and uprights, said portion being open to and defining with said compression member a bolster opening, and means engageable with said interlocking member and uprights and vertically releasable therefrom when said interlocking member is seated in said opening for interlocking said interlocking member against transverse movement relative to said side frame.

7. In a railway truck, a side frame comprising compression and tension members and spaced uprights defining with said members an opening, a rectangular interlocking member seatable in said opening, said interlocking member having portions engageable with said tension member and uprights, said portions being open to and defining with said compression member a bolster opening, means on said interlocking member and engageable with said compression member for limiting upward movement of said interlocking member relative to said side frame, and means releasably engageable with said interlocking member and side frame intermediate vertical and transverse limits of said side frame opening and vertically releasable when said interlocking member is seated therein for interlocking said interlocking member against transverse movement relative to said side frame.

8. In a railway truck, a side frame comprising compression and tension members and spaced uprights defining with said members an opening, an interlocking member seatable in said opening, said interlocking member being formed of a bottom wall, spaced side walls upstanding from said bottom wall, means on said side walls and engageable with said side frame for preventing outboard and upward movement of said interlocking member relative to said side frame, and vertically directed pin means releasably engageable with said interlocking member and side frame and accessible when said interlocking member is seated in said opening for locking said interlocking member against inboard movement relative to said side frame.

9. In a railway truck, a side frame comprising compression and tension members and spaced uprights defining therewith an opening, an interlocking member for interlocking side frame-supported elements as a unit to said side frame, said intelocking member being slidable horizontally into said opening from a side of said side frame and being seatable therein on said tension member, means on said interlocking member and engageable with said side of said side frame for limiting movement of said interlocking member into said opening, and means separate from and associated with said interlocking member and engageable with and vertically releasable from said side frame when said interlocking member is seated in said opening for releasably locking said interlocking member against movement out of said opening.

10. In a railway truck, a side frame comprising compression and tension members and spaced uprights defining therewith an opening, an interlocking member for interlocking side frame-supported elements as a unit to said side frame, said interlocking member being slidable horizontally into said opening from a side of said side frame and being seatable therein on said tension member, means on said interlocking member and engageable with said side of said side frame for limiting movement of said interlocking member into said opening, and means engageable with said interlocking member and side frame and vertically releasable therefrom when said interlocking member is seated in said opening for locking said interlocking member against movement out of said opening.

11. In a railway truck, a side frame having a substantially rectangular opening defined by tension and compression members and spaced columns, a substantially rectangular member slidable horizontally into said opening for interlocking side frame-supported elements as a unit with said side frame, said interlocking member comprising a base seatable on said tension member and providing a spring seat for seating a spring group, a pair of spaced

guide columns upstanding from said base for guiding a bolster supported on said spring group, said base and guide columns being open to and defining with said compression member a bolster opening, spaced means each surmounting one of said guide columns and engageable with said compression member for limiting upward movement of said interlocking member relative to said side frame, flange means bridging said guide columns inboardly of said side frame opening and engageable with an inboard side of said side frame, and locking pins releasably seatable in complementary slots formed in confronting walls of said guide columns and uprights for interlocking said interlocking member against transverse movement relative to said side frame.

12. In a railway truck, a subframe seatable in an opening in a side frame for interlocking side frame-supported elements as a unit with said side frame, comprising a bottom wall, spaced side walls upstanding from said bottom wall, and bridge means off-set inboardly from and connecting said side walls above said opening, said bottom and side walls being open to and defining with an overlying portion of said side frame a bolster opening, and said bridge means being disposed inboard of and engageable with said overlying portion of said side frame for limiting movement of said subframe outboardly relatively to said side frame.

13. In a railway truck, a subframe slidable into an opening in a side frame for interlocking side frame-supported elements as a unit with said side frame, comprising a bottom wall, spaced side walls upstanding from said bottom wall, and a top wall off-set inboardly from and connecting said side walls and having a stiffening flange instanding therefrom, said bottom and side walls being open to and defining with an overlying portion of said side frame a bolster opening, and said top wall being disposed inboardly of and above said opening and being engageable with an inboard side of said side frame for limiting movement of said subframe outboardly of said side frame.

14. In a railway truck, a subframe slidable into an opening in a side frame for interlocking side frame-supported elements as a unit with said side frame, comprising a bottom wall, spaced side walls upstanding from said bottom wall, a top wall off-set inboardly from and connecting said side walls above said opening, said bottom and side walls being open to and defining with an overlying portion of said side frame a bolster opening, and said top wall being engageable with an inboard side of said side frame for limiting movement of said subframe outboardly of said side frame, and vertically directed seats on said side walls and cooperating with complementary seats on said side frame to releasably receive locking means for releasably locking said subframe against transverse movement relative to said side frame.

15. In a railway truck, a subframe for interlocking side frame-supported elements as a unit with a side frame, comprising a bottom wall, spaced side walls upstanding from said bottom wall, brake beam guides integral with said subframe and each outstanding from one of said side walls, an integral peripheral flange merging at lower extremities with said guides and extending thereabove along and between said side walls, said flange being vertically directed and engageable with an inboard face of said side frame for limiting outboard movement relative thereto of said subframe, an inboardly directed stiffening flange connected to and projecting inboardly from said peripheral flange between said side walls, and vertically directed seats on said side walls and cooperating with complementary seats on said subframe for enabling said subframe to be interlocked with said side frame.

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