Jan 6, 1931. C. J. W. CLASEN 1,787,722

RAILWAY TRUCK

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Fig. 1.

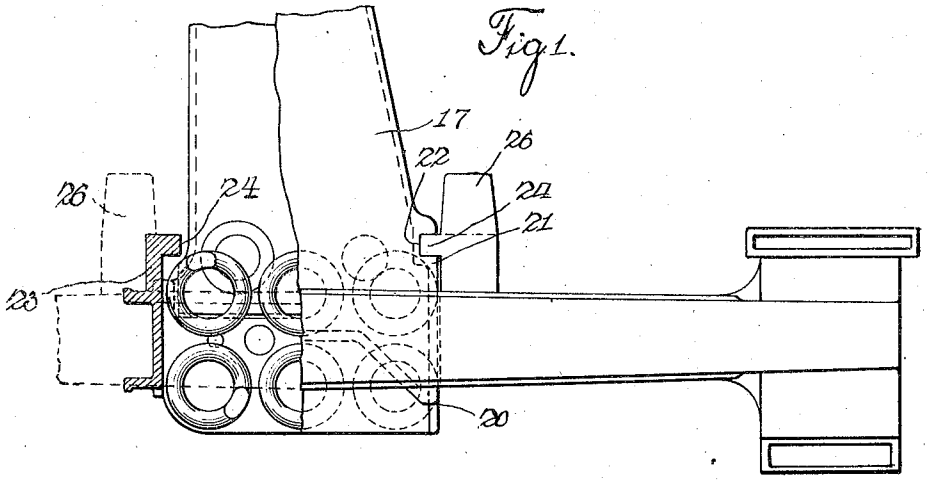


Fig. 2.

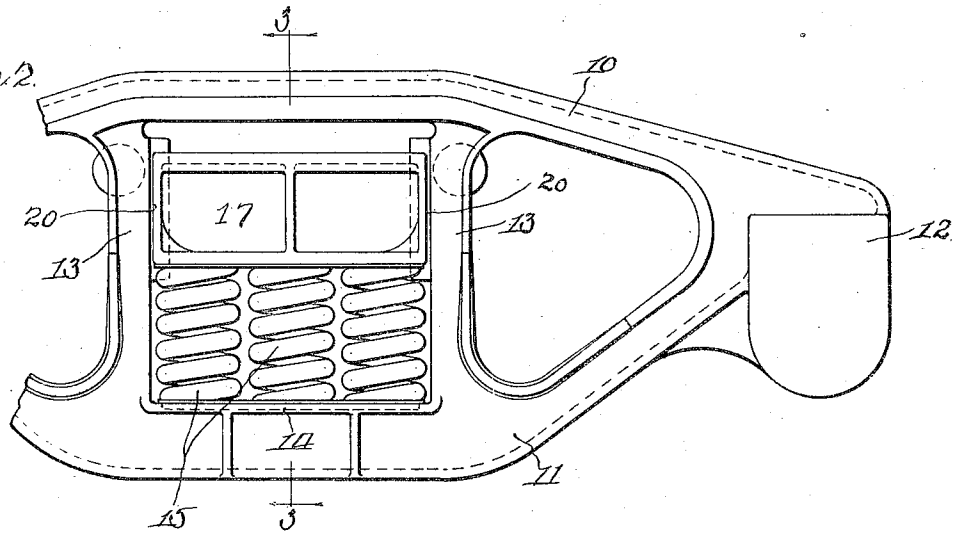
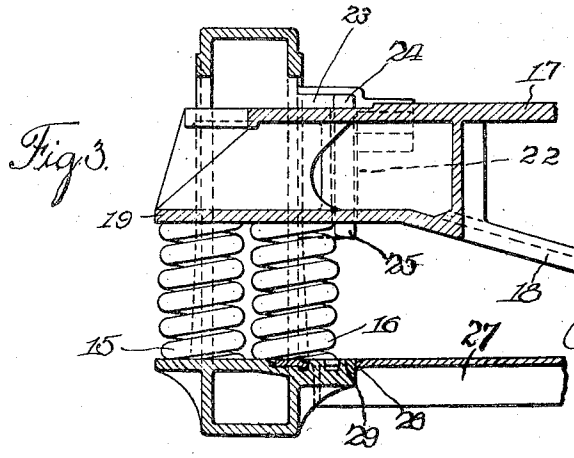


Fig. 3.



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Fig 4.

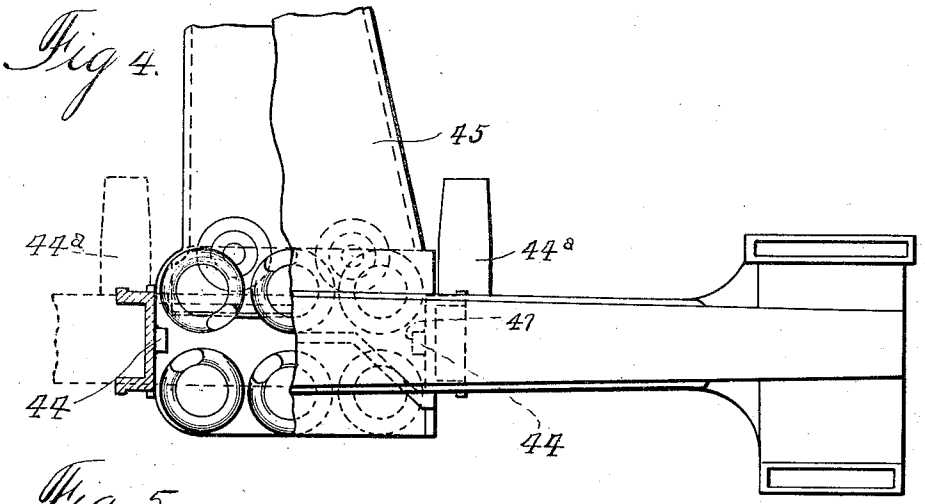


Fig. 5

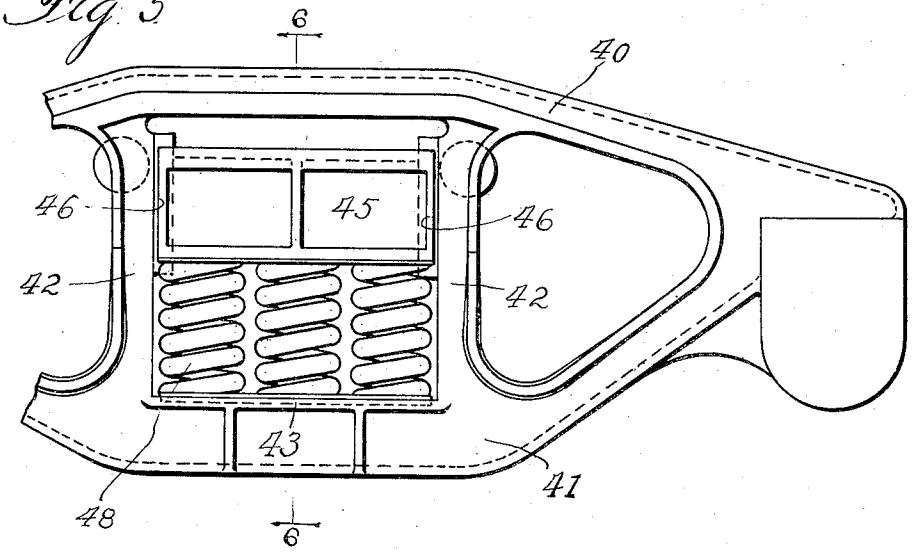
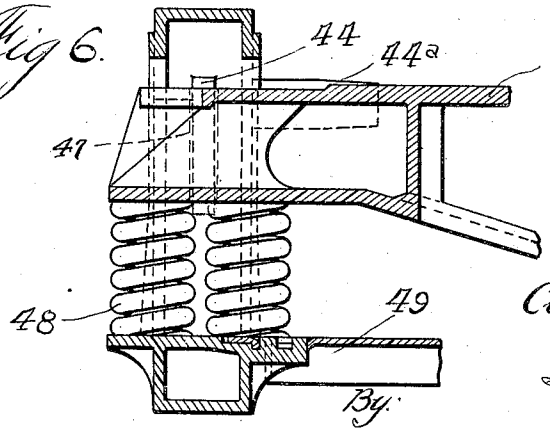


Fig 6.



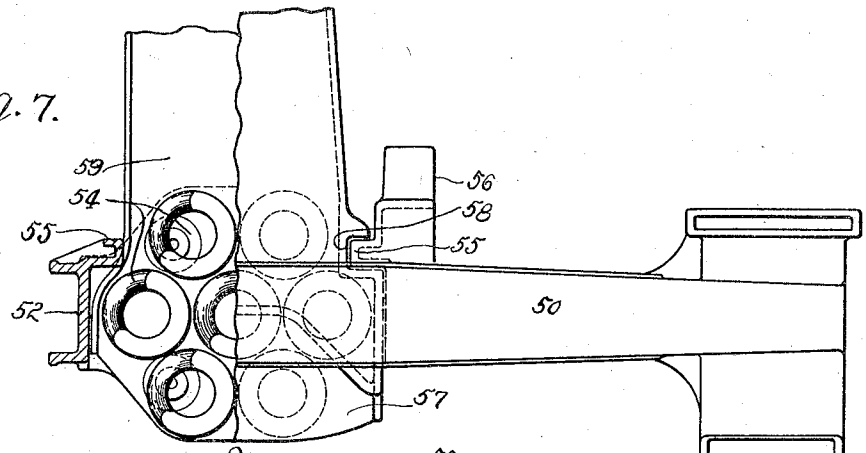
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RAILWAY TRUCK

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Fig. 7.



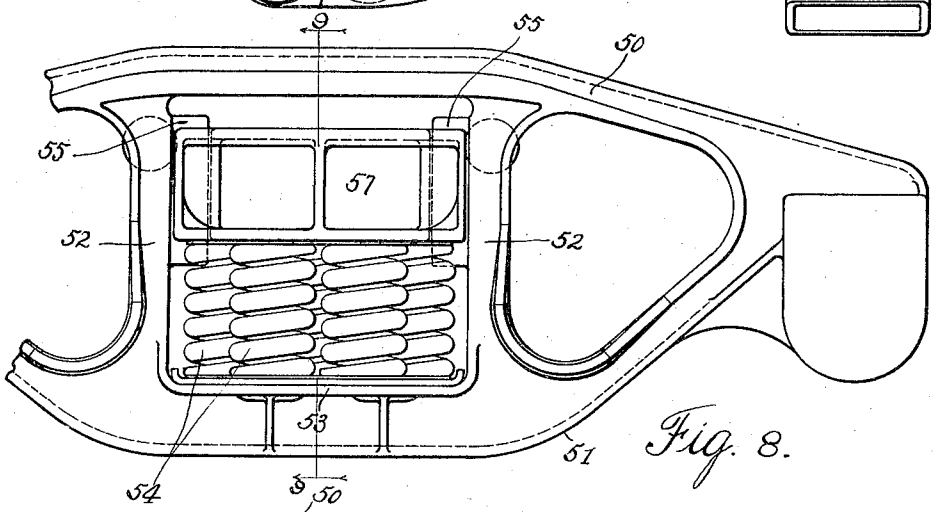
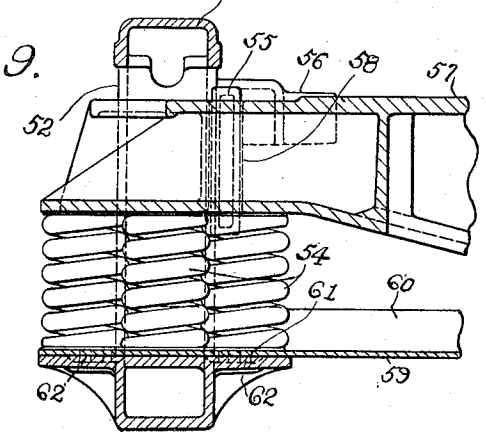


Fig. 8.

Fig. 9.



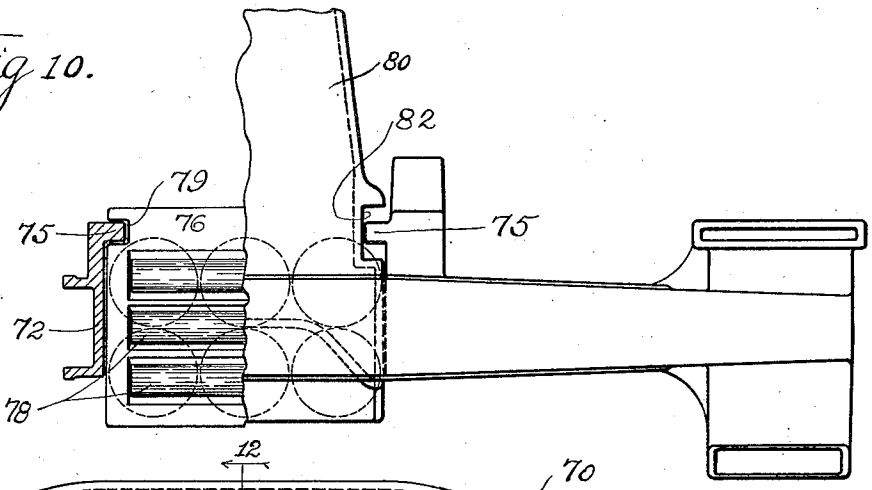
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RAILWAY TRUCK

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Fig 10.



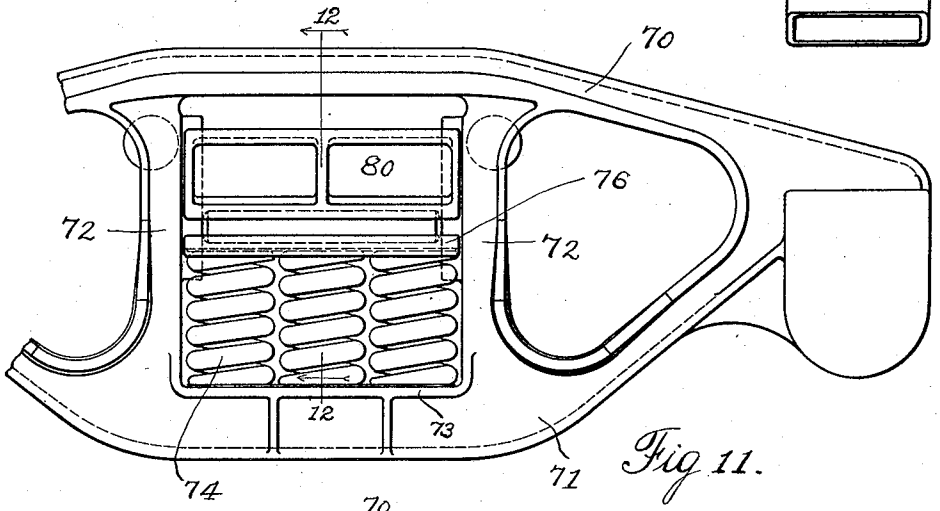
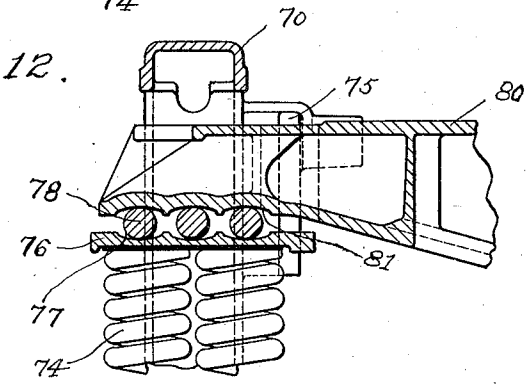


Fig 11.

Fig 12.



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UNITED STATES PATENT OFFICE

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RAILWAY TRUCK

Application filed June 10, 1926. Serial No. 114,987.

This invention relates to railway trucks.

The principal purpose of the present invention is to provide a railway truck designed to effect increased spring capacity without the necessity of increasing the wheel base of the truck, the length of the spring seats of the side frames, or spacing of the brake hanger brackets of the truck.

A more particular object of the invention is to provide a truck in which the side frames have guide columns arranged substantially parallel for their full height and spaced to permit accommodation of spring units, with a bolster of sufficient width at its ends to properly engage the guide columns and fully cover the spring clusters formed by the spring units, in conjunction with guide means for limiting the longitudinal movement of the bolster, which guide means are rigidly connected to the side frames and are arranged so as to permit utilization of a maximum number of spring units of maximum height upon the spring seat without in any way interfering with the functions of the guide means, or the assembly of the truck parts, and being so disposed as to permit spacing of the brake hanger brackets in accordance with good practice without increasing the wheel base of the truck.

Another object of the invention is to provide a truck having side frames of the above character in combination with a spring plank for connecting the side frames which is detachably maintained in position by the pressure exerted by the spring clusters in the side frames.

Other and further objects of the invention will more clearly appear from the description and claims hereinafter following.

In the drawings, Fig. 1 is a fragmentary top plan view of a side frame and bolster showing my invention used in connection therewith. Fig. 2 is a fragmentary side elevation of a side frame and bolster showing my invention incorporated therein. Fig. 3 is a transverse, vertical sectional view of the invention on the line 3—3 of Fig. 2. Fig. 4 is a fragmentary top plan view of a side frame and bolster, similar to Fig. 1, showing a slightly different embodiment of the invention. Fig. 5 is a fragmentary side elevational view of the construction shown in Fig. 4. Fig. 6 is a transverse, vertical, sectional view of the invention on the line 6—6 of Fig. 5. Fig. 7 is a fragmentary top plan view of a side frame and bolster, showing still another embodiment of the invention. Fig. 8 is a fragmentary side elevational view of the construction shown in Fig. 7. Fig. 9 is a transverse vertical, sectional view of the invention on the line 9—9 of Fig. 8. Fig. 10 is a fragmentary top plan view of a side frame and bolster showing still another embodiment of the invention. Fig. 11 is a fragmentary side elevational view of a side frame and bolster of the construction shown in Fig. 10. And Fig. 12 is a transverse vertical, sectional view of the invention on the line 12—12 of Fig. 11.

In the various views of the drawings, only one side portion of a truck has been shown, but it will be understood that the other side of the truck will be of a construction to correspond to the portion shown.

Referring first to Figs. 1 to 3 of the drawings, the invention contemplates an integral side frame comprising a compression member 10, a tension member 11, journal boxes 12, and bolster guide columns 13—13. The bolster guide columns 13—13, as shown, are formed integrally with the compression member 10 and tension member 11, and the guide surfaces of said guide columns are spaced apart substantially equi-distantly for their full height, said guide columns at their bottom end portions merging into the spring seat 14. The spring seat is of a length corresponding approximately to the length of the spring seats ordinarily used, or of slightly greater or less length, if desired, and since the guide columns 13—13 are located at the extremities of the spring seat and are spaced apart for their full height a distance corresponding to the length of the spring seat, there are no offsets in the faces of said guide columns to interfere with placing springs of full height closely adjacent the faces of the columns. The spring seat 14 extends laterally upon each side of the tension member

11 as shown so as to accommodate the coiled spring groups.

In combination with a truck having side frames of the character above described, there is provided a bolster 17 for cooperation therewith. The bolster 17 is preferably of hollow formation having an intermediate portion relatively narrow and deep in cross section, as indicated at 18, to provide the necessary strength, and said bolster has its opposite end portions 19 widened to fit between the guide columns, and relatively shallower in depth than the intermediate portion 18. Each end portion 19 has its side faces 20—20 arranged in parallel relation so as to engage the guide faces of the guide columns, and said parallel faces 20 are preferably of such length as to extend inwardly of the side frame a considerable distance when the bolster is in operative connection with the side frame, as indicated at 21. The portion 21 is formed with an inwardly extending vertically disposed groove, indicated at 22, adapted for the reception of the bolster guide means hereinafter referred to. Each bolster end portion 19 is of sufficient width so as to substantially cover the spring cluster when in operative position.

Formed or rigidly associated with each side frame adjacent the upper ends of the guide columns, and preferably upon the inside of the side frame, are guide supports 23—23, which as shown are formed integrally with said guide columns, and extend transversely of the side frame a suitable distance. Preferably formed integrally with the end portions of said supports are guide ribs or bolster guide members 24—24 which members are disposed in a longitudinal direction with respect to the side frame, and are offset transversely inwardly from the inner surface of the side frame a considerable distance, preferably such as to be disposed outside of the spring cluster, and just clear of the same, when the parts are in position as best shown in Fig. 3. The ribs 24—24 extend toward each other beyond the plane defined by the guide surfaces of the adjacent guide columns and said ribs further extend in a vertical direction downwardly so as to terminate a suitable distance below the tops of the spring units, as indicated at 25, when the parts are in operative position. The guide ribs 24—24 extend into the grooves 22—22 formed in the bolster, and serve to guide the bolster in its up and down movement, and to maintain the same against longitudinal shifting in both directions relative to the associated side frame, the ribs 24—24 being of sufficient length to properly guide the bolster end throughout its range of movement when the springs are in position. In this connection it will be understood that the guide ribs 24—24 might be formed on the bolster, and the grooves 22—22 formed in members connected with the side frame, this reversal of construction, though not shown, being deemed within the spirit of my invention, and hereinafter claimed.

Preferably integrally formed with the upper portions of the supports 23—23 are the brake hanger brackets 26—26, and it should be noted that by reason of the projection of the guide ribs inwardly toward each other beyond the planes of the guiding surfaces of the guide columns, the additional width of the bolster may be accommodated while the brake hanger brackets 26—26 may be disposed within the required standard spacing, without increasing the wheel base of the truck.

In conjunction with a truck of the character above described, a detachable spring plank 27 is provided, each end of said spring plank having apertures 28 fitting over bosses 29 formed on the spring seat, the parts being so arranged that a part or all of the spring cluster bears upon the end of the spring plank and maintains the apertured portion of the spring plank in engagement with the bosses 29 when the parts are in operative position.

Assembly of a truck of the above character is accomplished by inserting the end of the bolster through the lower portions of the guide columns and then elevating the bolster ends to engage the grooves with the guide ribs 24, after which the spring plank and spring cluster are arranged in position. The method of assembly is similar to that in ordinary truck construction which is in general use. In ordinary truck construction where a cast metal side frame with integral columns is used, it is common practice to design the truck columns with their bottom portions spaced farther apart than the upper portions which engage the guide surfaces of the bolster. This, of course, is for the purpose of admitting the outside bolster stop guides between the columns when the truck is being assembled. It is, therefore, apparent that due to offset columns waste space results, and if it is desired to use additional spring units with consequent widening of the ends of the bolster to cover the entire spring cluster, an unusually long spring seat would also result and would have the effect of seriously impairing the strength of the frame at this point. The invention, therefore, permits of a stronger spring seat for a given size of spring clusters by reason of shortening of said seat as above referred to.

Particular attention is directed to the fact that in the construction contemplated by my invention, the entire space between the columns is utilized for effective spring capacity and the necessary stops to prevent endwise movement of the bolster in both directions are placed at a point to clear the spring cluster, preferably behind the side frame, al-

though the guide stops could be placed elsewhere, if desired. The guide stops 24—24, as contemplated by applicant, extend inwardly toward each other beyond the planes defined by the transverse guiding surfaces of the guide columns, which while permitting utilization of all the space between the columns for effective spring capacity, permits the placing of the brake hanger brackets in the desired positions without the necessity of increasing the wheel base of the truck.

Referring now to Figs. 4 to 6 inclusive, there is provided an integral side frame comprising compression member 40, tension member 41 and bolster guide columns 42—42, and spring seat 43 in the same manner referred to in connection with Figs. 1 to 3 inclusive. The guide surfaces of the guide columns 42 are spaced apart substantially equi-distantly for their full height, and formed upon the guide faces of said guide columns are oppositely disposed guide ribs or members 44—44, said ribs being centrally located upon the guide surfaces of the guide columns, extending vertically, and terminating somewhat below the heads of the spring units when the same are in position upon the spring seat. Brake hanger brackets 44^a are formed upon the guide columns 42—42 in the same positions as the brake hanger brackets 26—26 heretofore described.

A bolster 45 is provided having guide surfaces 46—46 adapted to engage the guide faces of the guide columns, and said bolster is provided with vertical grooves 47—47 adapted for the reception of guide members 44—44 for permitting vertical movement of the end of the bolster while forming stops to prevent endwise movement of the bolster in opposite directions. After the bolster has been engaged with the bolster guide members, the spring units 48 are placed upon the spring seat, said units being arranged in transversely disposed pairs forming two longitudinally extending rows of spring units which are spaced apart and offset with respect to the central guide members 44—44. A spring plank arrangement 49 is provided which is similar in all respects to the spring plank 27 and associated parts described in detail in connection with Figs. 1 to 3 inclusive. An arrangement of the character just described has advantages similar to those pointed out in connection with the construction described in Figs. 1 to 3, the guide members being out of the way or clear of the spring units, and the entire distance between the bolster guide columns being utilized for effective spring capacity, the arrangement also permitting proper spacing of the brake hanger brackets 44^a.

Referring now to Figs. 7 to 9 inclusive, there is shown an integral side frame comprising compression member 50, tension member 51, and bolster guide columns 52—52. A spring seat 53 is formed upon the tension member between the guide columns 52—52, said spring seat being of somewhat greater transverse extent than the spring seats heretofore referred to, and tapering from its widest portion inwardly toward the guide columns 52—52. Said spring seat is arranged to accommodate a plurality of spring units 54, arranged in three parallel longitudinally extending rows, the outside rows including two spring units, while the central row includes three spring units, the arrangement being such that the end spring units of the central row project somewhat outwardly beyond the spring units of the outside rows and are disposed upon the narrowed or tapered portions of the spring seat.

Preferably integrally formed with the inner portions of the guide columns 52—52 are guide ribs 55—55 extending toward each other in a longitudinal direction with reference to the side frame and projecting inwardly beyond the guide surfaces of the guide columns 52—52, said guide ribs being arranged in such position that they are disposed at one side of and clear of the end units of the central row of springs as shown, and in such position that they do not interfere with the adjacent row of spring units in line therewith. Brake hanger brackets 56—56 are provided on the inner surfaces of the side frame closely adjacent to the guide surfaces of the guide columns 52—52.

A bolster 57 is provided and is of a character to engage the guide surfaces of the guide columns, said bolster being provided with grooves 58 adapted for the reception of the guide ribs 55 for limiting longitudinal movement of the bolster in opposite directions with reference to the side frame.

A spring plank 59 is provided having flanges 60 along the opposite longitudinal edges thereof, said spring plank extending between the guide columns outwardly the full width of the spring seat 53 as shown, the end portion of the spring plank being widened and the flanges 60 following the widened portions of the spring plank so as to accommodate the end units of the central row of springs. The spring plank 59 is provided with apertures 61 which fit over bosses 62 on the spring seat, the spring units 54 resting upon the end of the spring plank and holding the apertures thereof in engagement with the bosses 61.

Referring now to Figs. 10 to 12 inclusive, there is shown a construction of the character disclosed in Figs. 1 to 3 inclusive, as applied to a lateral motion truck. The construction illustrated in Figs. 10 to 12 inclusive, comprises a side frame having a compression member 70, tension member 71, guide columns 72—72, spring seat 73, spring units 74, bolster guide members 75—75, which parts are substantially identical with the

parts 10, 11, 13—13, 14, 15, 24—24, described in connection with Figs. 1 to 3 inclusive. In the construction now referred to a roller seat 76 is provided which is mounted upon the upper ends of the spring units 74, and is provided on its upper surface with a plurality of elongated depressions 77 adapted for the reception of elongated rollers 78 as shown. The rear end of the roller seat 76 is provided with grooves 79 which are slidably engaged with the lower ends of the guide members 75—75. A bolster 80 has its end portion disposed between the guide columns 72—72, said bolster being provided with roller contours 81 on its under surface adapted for the accommodation of the rollers 78. The bolster 80 is provided with cut out portions 82, adapted to accommodate the guide members 75—75, the extent of each cut out portion 82 being such as to permit limited longitudinal movement in opposite directions of the bolster 80 upon the rollers 78 and with respect to the side frame.

In assembling a truck of this character, the bolster is first inserted between the guide columns, the guide ribs engaged with the cut out portions, and the end of the bolster elevated, after which the roller seat and rollers are engaged with the guide ribs and elevated. The springs are then placed beneath the roller seat. Dismantling of the truck is effected by a reversal of the operations just mentioned.

In connection with the various embodiments of the invention above described, in each instance the guide ribs are shown as formed upon the side frame, and adapted to be disposed in grooves in the bolster, but it will be appreciated that ribs might be placed upon the bolster and the grooves formed in the side frame without departing from the spirit of my invention.

While I have herein shown and described what I now consider the preferred manner of carrying out the invention, the same is merely illustrative, and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In a truck, the combination with side frames having a specified wheel base corresponding to general practice, each side frame having a flat spring seat; guide columns integrally formed with said side frames and spaced apart a distance corresponding to the length of said spring seat and extending substantially parallel for the full height thereof; an increased number of spring units of dimensions and capacity corresponding substantially to those in use upon a truck having a wheel base and guide columns as before mentioned, said spring units bearing against each of said spring seats; a bolster removably disposed between the guide columns of each frame, said bolster being of a width co-extensive with the extent of said spring units and having side surfaces disposed in engagement with the opposed guide faces of said columns; and means for limiting longitudinal movement of said bolster with respect to said side frames, said means being integrally formed with said side frames at one side thereof clear of the springs and located adjacent the upper end portions of said columns and extending downwardly and terminating short of the lower ends of said columns to permit insertion and removal of said bolster.

2. As an article of manufacture, an integrally formed side frame having guide columns and a spring seat, and individual bolster guide elements spaced apart and rigidly secured to said columns, the effective guide surfaces of said guide elements being spaced transversely to one side of said side frame so as to be arranged in offset relation with reference to said spring seat.

3. As an article of manufacture, an integrally formed side frame having guide columns substantially parallel for their full height, and individual bolster guide elements formed integrally with said columns and spaced laterally to one side of said side frame and having guide portions spaced from and extending inwardly toward each other in a longitudinal direction with reference to said side frame.

4. In a truck, the combination with an integrally formed side frame provided with guide columns and a spring seat; of a spring cluster associated with said seat; a bolster having an end portion of full width to engage the guide surfaces of said guide columns; and means arranged at one side of said side frame and laterally offset with respect to said spring cluster, said means operating to limit endwise movement of said bolster in opposite directions.

5. In a truck side frame having integrally formed guide columns arranged to provide increased space between the upper portions thereof; a spring cluster; a bolster slidably mounted between the guide surfaces of said columns; and a single guide member positioned at one side of each of said guide columns adapted to co-act with said bolster to limit longitudinal movement thereof in both directions; and brake hanger brackets arranged toward the center of the side frame closely adjacent the planes defined by the column guide surfaces.

6. In a truck, the combination with side frames having a specified wheel base, said side frames having spring seats; integral guide columns spaced apart a distance corresponding to the length of each of said spring seats and extending substantially parallel for the full height thereof; an increased number of spring units of dimen-

sions and capacity corresponding substantially to those used upon a truck having a wheel base and guide columns as before mentioned; and means individual to each guide column for limiting in both directions longitudinal movement of said bolster with respect to said side frames, said means being arranged beyond the plane of the side frames and to one side of and clear of said spring clusters; and integral brake hanger brackets placed immediately adjacent the planes defined by the guide surfaces of said guide columns.

7. In a truck of the character described, the combination with a side frame having guide columns and a spring seat; a spring cluster associated with said spring seat; a bolster removably engaging said guide columns and bearing upon said spring cluster; and integral means on each side of the bolster opening for limiting the longitudinal movement of said bolster in opposite directions, said means being arranged in position on said side frame in laterally offset relation to and clear of said spring cluster.

8. In a truck, the combination with side frames having a specified wheel base corresponding to general practice, said side frames having spring seats of a length corresponding substantially to the length of spring seats used in connection with side frames of said specified wheel base; and guide columns spaced apart a distance corresponding to the length of said spring seat and extending substantially parallel for the full height thereof; an increased number of spring units of dimensions and capacity corresponding substantially to those in use upon a truck having a wheel base and guide columns as before mentioned; a bolster removably disposed between said guide columns and guide members on said guide columns for limiting in both directions longitudinal movement of said bolster with respect to said side frames, said guide members being positioned laterally to one side of and beyond said frame and clear of said spring clusters.

9. In a truck of the character described, the combination with a side frame having guide columns and a flat spring seat; a spring cluster associated with said spring seat; a bolster removably engaging the guide surfaces of said guide columns and extending beyond the outer faces thereof and bearing upon said spring cluster; and means associated with said guide columns for limiting the longitudinal movement of said bolster, said means being arranged so that the distance between the same is less than the distance between the guide surfaces of said guide columns, said means being formed integrally with said guide columns and laterally spaced therefrom.

10. In a truck, the combination with integrally formed side frames provided with guide columns and spring seats; of spring clusters associated with said seats; a bolster having end portions of full width to engage the guide surfaces of said guide columns and bearing upon said spring clusters; a spring plank detachably connecting said side frames; and means arranged at one side of the spring cluster of each side frame for limiting endwise movement of said bolster in both directions and serving to effect a connection between said side frames independently of said spring plank.

11. In a railway truck, the combination with side frames having substantially flat spring seats of a length to accommodate the bolster springs; guide columns spaced apart a distance corresponding to the length of spring seat and extending substantially parallel for the full height thereof; a bolster of full width disposed between said guide columns and engaging the guide faces thereof and means integrally formed with said side frames for limiting longitudinal movement of said bolster with respect to said side frames, said means individual to each guide column at each side of the bolster and being arranged to clear the bolster springs, said bolster being removably held in position by said means.

12. In a truck side frame having integrally formed guide columns and a spring seat, a spring cluster comprising a plurality of spring units including more than one arranged transversely with reference to said spring seat; a bolster adapted to bear upon said spring units; and integral means spaced transversely to one side of said side frame and clear of said spring units and cooperating with said bolster to limit the endwise movement thereof in opposite directions, said means being arranged adjacent the upper portions of the columns and terminating short of the lower portions thereof to permit insertion and removal of said bolster.

13. In a truck side frame having integrally formed guide columns arranged to provide increased space between the upper portions thereof; a spring cluster; a bolster slidably mounted between the guide surfaces of said columns; and a single guide member integrally formed with each of said guide columns adapted to co-act with said bolster to limit longitudinal movement thereof in both directions, said guide members terminating substantially midway between the top and bottom extremities of said guide columns to permit insertion and removal of said bolster.

14. In a truck side frame having integrally formed guide columns and a spring seat, a bolster positioned between said guide columns for vertical movement and adapted to have lateral movement with respect to said side frame, brake hanger brackets positioned on said side frame at one side thereof, guide

means integral with the brake hanger brackets permitting the vertical movement of the bolster and limiting the lateral movement thereof, and springs on said spring seat supporting said bolster.

15. In a railway car truck, the combination of a side frame having a spring seat and guide columns forming a bolster opening, a bolster positioned in said opening for vertical movement and restricted by said guide columns against movement longitudinally of said side frame, guides laterally offset with respect to said side frame and interengaging the bolster for limiting movement of said bolster longitudinally of itself in both directions relative to the side frame, and springs on said spring seat for supporting the bolster.

In witness that I claim the foregoing I have hereunto subscribed my name this 27th day of May, 1926.

CLAUS J. W. CLASEN.