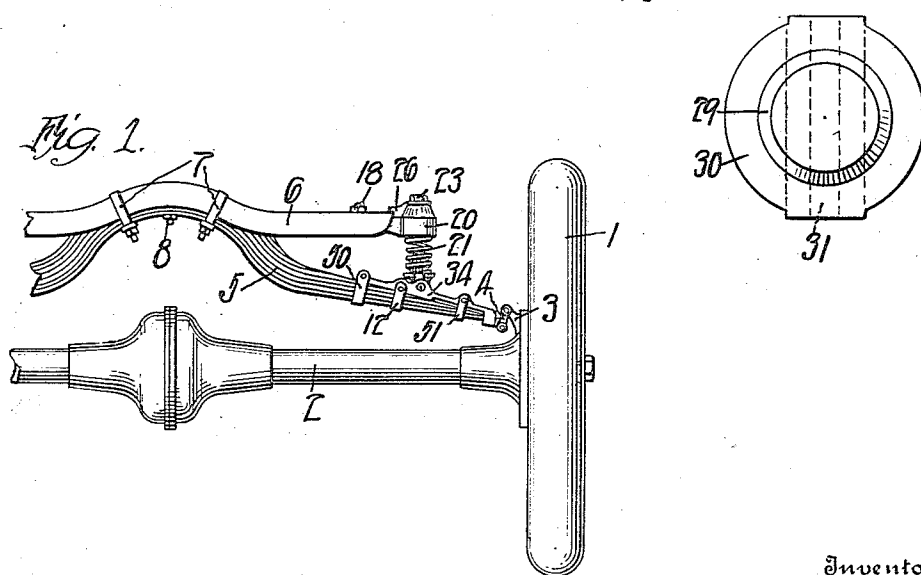
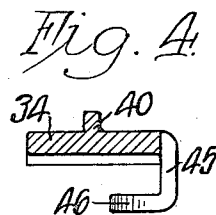
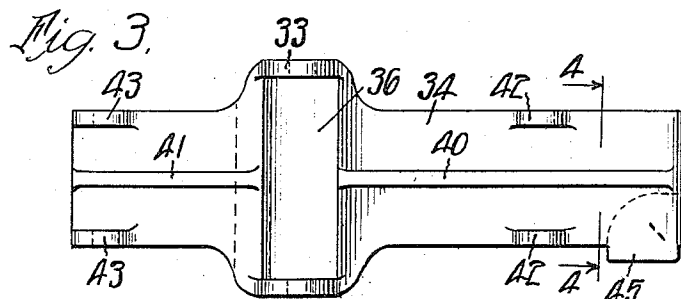


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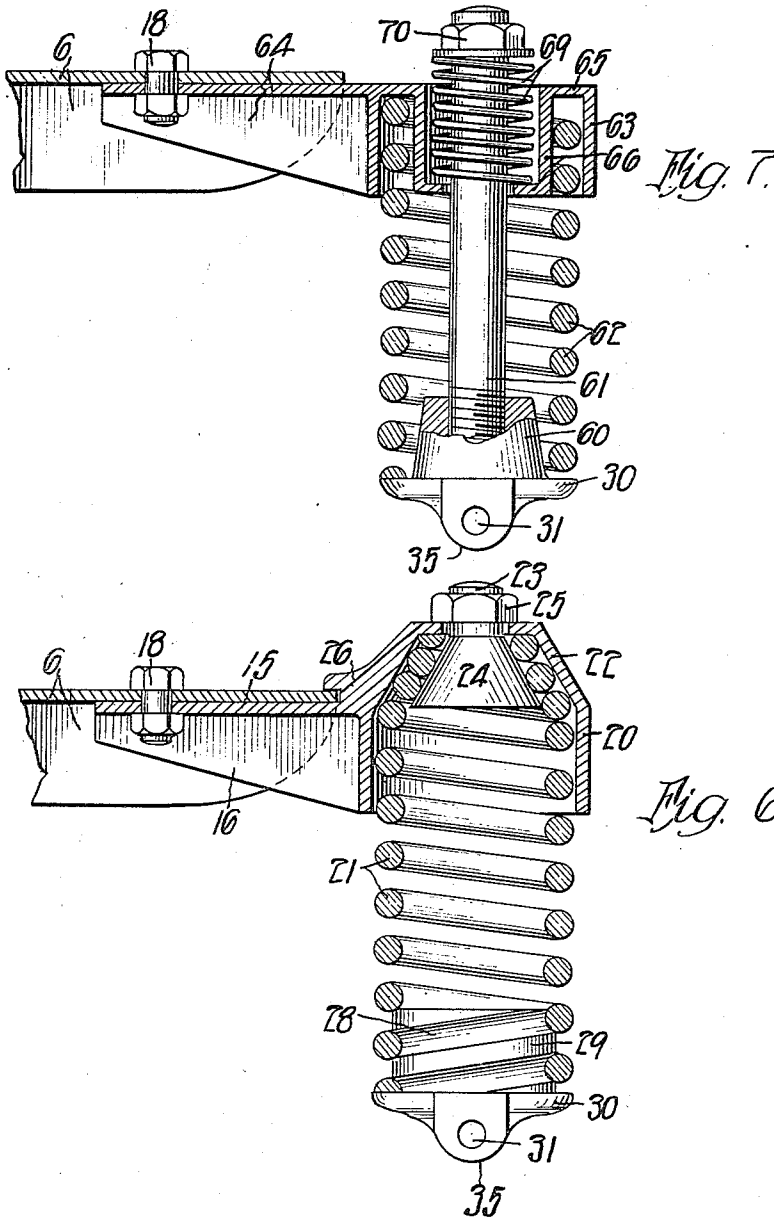
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 SPRING AND FRAME SUPPORTER FOR MOTOR VEHICLES.
 APPLICATION FILED APR. 18, 1917.

1,266,231.

Patented May 14, 1918.
 2 SHEETS—SHEET 2.



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JOSEPH DOTTL, OF DETROIT, MICHIGAN.

SPRING AND FRAME SUPPORTER FOR MOTOR-VEHICLES.

1,266,231.

Specification of Letters Patent.

Patented May 14, 1918.

Application filed April 18, 1917. Serial No. 162,884.

To all whom it may concern:

Be it known that I, JOSEPH DOTTL, a citizen of the United States, and residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Spring and Frame Supporter for Motor-Vehicles, of which the following is a specification:

In my Patent No. 1,205,603, dated November 21, 1916, I have shown auxiliary spring units whereby the ends of the rear bolster of a well known type of vehicle are connected to points intermediate between the center and ends of an arched main spring which extends transversely across the rear of the vehicle substantially in the vertical plane through the axis of the axle. It is found in practice that the construction shown tends to cause appreciable deflection at the points of connection of the units with the main spring. It is also found that the units shown in the preferred embodiment of said invention are occasionally disengaged from the spring clip as the vehicle passes over an unusually large obstruction in the road-way.

To the end of overcoming the objections above referred to, the present invention consists in the provision of means for connecting the lower ends of the units to the main spring throughout a considerable portion of the length of the latter, thus distributing the load that comes down from the ends of the bolster over several inches of the length of the spring and thereby avoiding any sharp deflection point. The invention also consists in means co-acting with the extreme end portions of the main spring for preventing the lower ends of the springs of the auxiliary units from slipping laterally lengthwise of the main spring. The invention also consists in means for preventing the springs of the auxiliary units from becoming displaced when one end of the bolster is thrown upwardly. It further consists in the details of construction shown, described and claimed.

In the drawings, Figure 1 is a fragmentary rear elevation of enough of the vehicle to indicate the application of a preferred embodiment of the invention. Fig. 2 is an enlarged fragmentary section, partly an elevation, corresponding to Fig. 1. Fig. 3 is a plan view of the base member shown in Fig. 2. Fig. 4 is a section on the line 4-4 of Fig. 2. Fig. 5 is a plan view of the

member of which the lower ends of the auxiliary springs are directly received. Fig. 6 is an enlarged vertical section showing more fully the preferred construction of the means whereby the auxiliary springs are prevented from becoming disengaged through bumping. Fig. 7 is a view similar to Fig. 6, showing a modification.

The wheels 1, axle housing 2, shackle supporting arms 3, shackles 4, main spring 5 (pivotally supported by said shackles) and the bolster 6, which is centrally connected to the main spring by means of the clips 7 and center bolt 8, are all of well known construction. The main spring is, of course, substantially vertically above the longitudinal axis of the axle and axle housing. It will be understood that the lower leaf of the main spring is looped around the bolt 9, whereby said spring is connected to the shackles 4. One of the upper leaves of the main spring is looped back upon itself as indicated at 10 (Fig. 2) and as in the usual construction, receives a bolt 11 that passes through the upper ends of the spring clip 12 whereby the outer ends of the leaves are held in proper alinement with one another.

The bolster is of substantially U shape in cross section and opens downwardly, thus forming a channel into which an extension arm 15 (Fig. 6) is inserted, said arm including the flanges 16 which fit closely against the inner surfaces of the flanges of the bolster. Bolts 18 hold the arms in position. At points outwardly on the ends of the bolster, these arms merge into a cup shaped housing 20 for the upper ends of the compression springs 21, the axes of which are substantially vertical. At their upper ends the housings 20 form frusto-conical portions 22 the upper faces of which are perforated to allow the passage of bolts 23 that terminate within the housing in the conical heads 24. The upper ends of the springs 21 are tapered to correspond to the taper of the upper portions of the housings and are retained snugly in position when the nuts 25 are tightened. It is therefore impossible for an upward movement of the bolster to withdraw the upper end of the spring 21 from the housing; the tension to which the spring is put as the corresponding end of the bolster tends to rise also relieves the clips 7 and center bolt and prevents the body from tilting. In order to strengthen the connection between the arm and the bolster the

former may be provided with a notched rib 26 that fits over the end of the web of the latter.

At its base the spring 21 is preferably inter-engaged with threads 28 formed on the shank 29 of a spring cap, which includes the annular flange 30 and is perforated transversely at 31 to receive a cross bolt 32, whereby said cap is secured in position between the upwardly extending ears 33 on the chair 34. The lower face of the cap may be curved substantially cylindrically at 35 and the upper face of the chair 34 may have a corresponding socket 36 against which the cap rests directly, it being understood that sufficient play may be left between the bolt 32 and the walls of the perforation 31 to allow the proper pivoted seating action and to relieve the bolt from thrust. The chair 34 is hollowed at its lower surface at 38 to receive the portion 9 of the spring; it is also shaped to conform to the slope of the several leaves, whereby a contact is insured between it and the latter for a considerable distance lengthwise of the main spring. As shown, the chair is provided on its upper surface with longitudinal reinforced ribs 40 and 41 and with perforated ears 42-43 arranged in pairs on opposite sides of the bolt 32. The chair also extends down near to the pivot bolt 9 and is provided with a lug 45 that extends downwardly along the face of the spring, then inwardly at 46 and finally lengthwise of the spring at 46 to engage with the inner face of the loop heretofore referred to as being a part of the lower leaf. The portion 46 might, however, engage the shackle. Clips 50-51 and bolts 52-53 clamp the member 34 to the upper surface of the spring. Engagement of the chair with the end of the spring or with the shackle, as the case may be, prevents the former from slipping longitudinally of the latter; the engagement of the member 10 with the wall of the groove 38 also tends to serve the same purpose.

In the embodiment shown in Fig. 7, the cap 29-30 is replaced by a cap 60 that differs from the former substantially only in that the threads 28 are omitted and the shank is internally threaded to receive the lower end of the bolt 61. Resting on the flange 30 is a compression spring 62 the upper end of which is confined in the housing 63 formed as a part of the extension arm 64. The upper wall 65 of the housing merges into the depending cup 66 the bottom of which is perforated to allow passage of the bolt 61; and within the cup is a spring 69, preferably of less strength than the spring 62, that is held in place by the nut 70.

It is clear that many changes may be made in the details of construction without departing from the spirit of the invention, for example the spring may be mounted on the

front axle as well as on the rear axle housing, and I do not, therefore, wish to be limited otherwise than as indicated by the subjoined claims in which the term "axle construction" is intended to designate either the axle housing or the axle itself.

I claim:—

1. A motor vehicle comprising an axle construction, a bolster extending longitudinally of and substantially above the axle construction, means for transmitting loads from said bolster to said axle construction, said means including a main spring centrally secured to the bolster and terminally connected to the axle construction, and means for transmitting loads from the ends of the bolster downwardly to the main spring, said means including resilient members connected at their upper ends to the corresponding end portion of the bolster, together with means for supporting the lower ends of the resilient members on the main spring and distributing the load for a considerable distance along the length of said main spring, whereby sharp deflection points in the latter are avoided.

2. A motor vehicle comprising an axle construction, a bolster extending longitudinally of and substantially above the axle construction, means for transmitting loads from said bolster to said axle construction, said means including a main spring centrally secured to the bolster and terminally connected to the axle construction, and means for transmitting loads from the ends of a bolster downwardly to the main spring, said means including resilient members connected at their upper ends to the corresponding end portion of the bolster, together with means for supporting the lower ends of the resilient members on the main spring, said last mentioned means comprising caps for the lower ends of the resilient members and chairs pivotally connected to said caps, said chairs extending along the upper surfaces of the main spring and being adapted to transmit loads thereto for a considerable distance along the latter.

3. A motor vehicle comprising an axle construction, a bolster extending longitudinally of and substantially above the axle construction, means for transmitting loads from said bolster to said axle construction, said means including a main spring centrally secured to the bolster and terminally connected to the axle construction, and means for transmitting loads from the ends of the bolster downwardly to the main spring, said means including resilient members connected at their upper ends to the corresponding end portions of the bolster, together with means for supporting the lower ends of the resilient members on the main spring, said last mentioned means comprising caps for the lower ends of the resili-

ent members and chairs pivotally connected to said caps, said chairs extending along the upper surfaces of the main spring and being adapted to transmit loads thereto for a considerable distance along the latter, means for securing the chair in position on the spring on opposite sides of the points at which the chairs are pivotally connected to the caps.

4. A vehicle comprising an axle construction, an arched spring extending longitudinally thereof, a bolster centrally secured to said spring, said spring being capable of transmitting from its point of connection with the bolster to its ends substantially all tendency of the bolster to move longitudinally of the spring, and means for transmitting loads from each end portion of the bolster to corresponding portions of the spring between the center and the ends thereof, said portions being of considerable length longitudinally of the spring, whereby sharp deflection points are avoided.

5. A vehicle comprising an axle construction, an arched spring extending longitudinally thereof, a bolster centrally secured rigidly to said spring, and resilient means for transmitting stresses from and to the end portions of said bolster to points intermediate between the center and ends of said spring, said means including a single coiled spring at each end of said bolster, connections between the upper ends of said coiled

springs and the bolster, whereby both tension and compression stresses are transmitted thereto, and connections between the lower ends of said coiled springs and the arched spring whereby both tension and compression stresses are transmitted thereto.

6. A vehicle comprising an axle construction, an arched spring extending longitudinally thereof, a bolster centrally secured rigidly to said spring, and coiled springs for transmitting stresses from the end portions of the bolster to points intermediate between the center and ends of said spring, caps for the lower ends of said coiled springs, and means extending substantially to the ends of the arched spring for holding the caps in proper relation thereto.

7. A vehicle comprising an axle construction, an arched spring extending longitudinally thereof, a bolster centrally secured rigidly to said spring, coil springs for transmitting excess stresses downwardly from the end portions of said bolsters, the upper ends of said coil springs having tapering ends, housings surrounding said tapering ends and connected to the corresponding ends of the bolster, and bolts having heads received within said tapered ends and passing through said housing, whereby said springs are connected to said bolster to receive both compression and tension stresses.

JOSEPH DOTTL.