

No. 724,801.

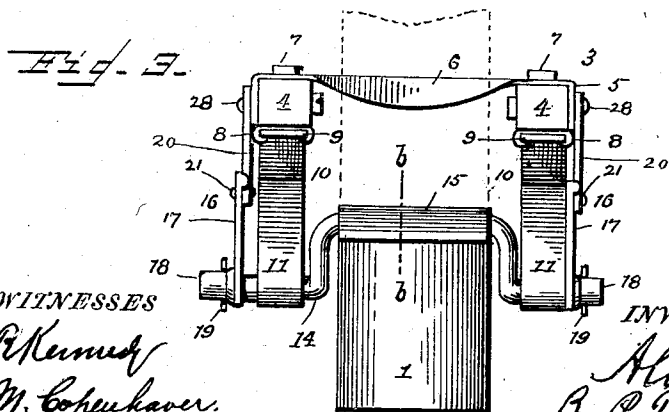
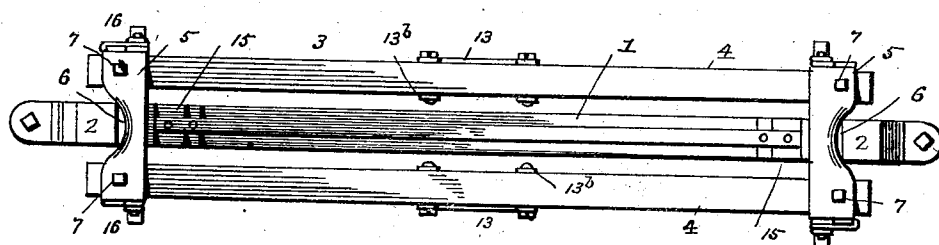
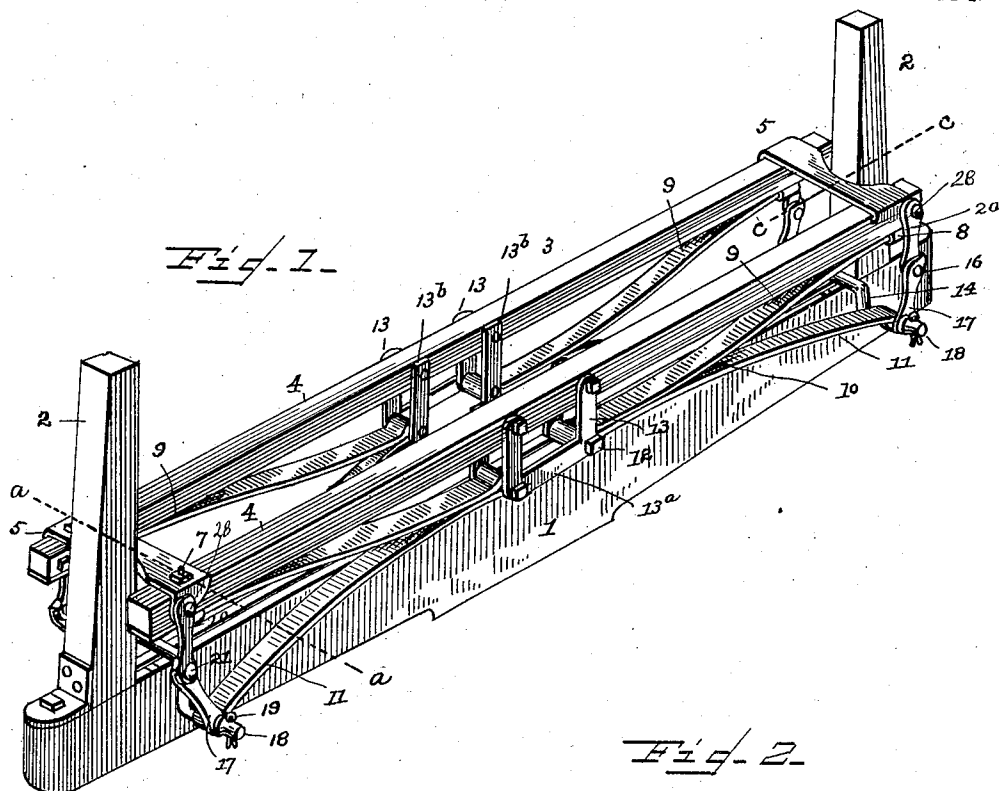
PATENTED APR. 7, 1903.

A. BURULL.
BOLSTER SPRING.

APPLICATION FILED DEC. 2, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES

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Fig. 4.

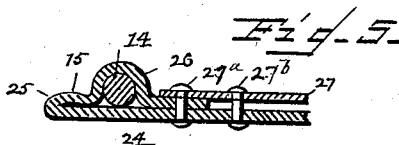
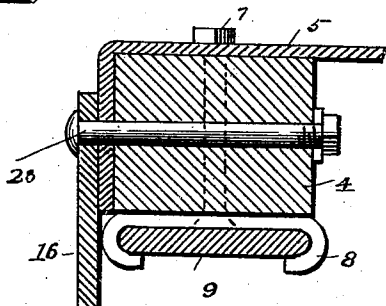


Fig. 7.

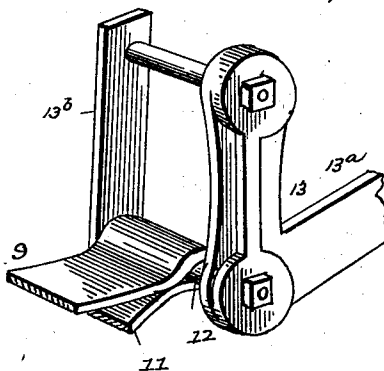


Fig. 6.

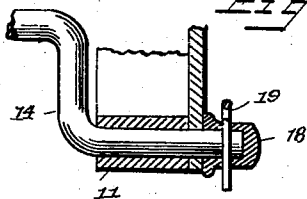


Fig. 8.

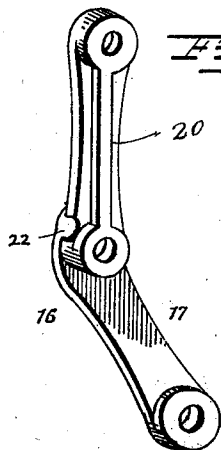
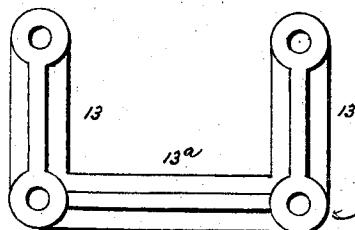


Fig. 9.



Fig. 10.



WITNESSES

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UNITED STATES PATENT OFFICE.

ALBERT BURULL, OF STOUGHTON, WISCONSIN, ASSIGNOR TO THE MANDT WAGON COMPANY, A CORPORATION OF ILLINOIS.

BOLSTER-SPRING.

SPECIFICATION forming part of Letters Patent No. 724,801, dated April 7, 1903.

Application filed December 2, 1902. Serial No. 133,567. (No model.)

To all whom it may concern:

Be it known that I, ALBERT BURULL, of Stoughton, county of Dane, and State of Wisconsin, have invented a new and useful Improvement in Bolster-Springs, of which the following is a specification.

This invention relates to bolster-springs for wagons and other vehicles, and has reference more particularly to that type of bolster-spring in which the springs are arranged in pairs at the opposite ends of the bolster between the same and the wagon-body.

The invention consists in various improvements in springs of this type having in view durability of construction and effectiveness in operation.

In the accompanying drawings, Figure 1 is a perspective view of my improved bolster-spring. Fig. 2 is a top plan view of the same. Fig. 3 is an end elevation. Fig. 4 is a vertical sectional elevation on the line *a a* of Fig. 1. Fig. 5 is a vertical longitudinal section on the line *b b* of Fig. 3. Fig. 6 is a vertical section through one end of the shackle-bolt. Fig. 7 is a perspective view of the spring-hangers. Fig. 8 is a perspective view of one of the toggle-links for limiting the rebound action of the springs. Fig. 9 is a longitudinal section on the line *c c* of Fig. 1. Fig. 10 is an elevation of one of the spring-hangers.

Referring to the drawings, 1 represents a wagon-bolster, and 2 vertical stakes or standards rising from the ends of the bolster in the usual manner. The wagon-body extends between these stakes and rests on the frame 3, consisting of two parallel bars 4, connected at their ends by cross-plates 5, which plates have their ends bent downward at right angles, so as to embrace the sides of the bars. Between its ends the plate 5 has its outer edge where it extends between the bars 4 bent downward and curved backward, forming a depression or socket 6, which receives the stakes and serves to guide the bed-frame in its vertical movements between the stakes. These cross-plates are connected rigidly to the bars by means of vertical bolts 7, Fig. 4, which extend upwardly through guide-clips 8 on the under sides of the bars, as more fully described hereinafter, and through the bars

and the plates, where the bolts are provided with nuts.

The spring guide-clips extend transversely of the bars and have their ends turned downward and inward, forming guide-grooves, in which are loosely mounted, so as to slide freely, the upper arms 9 of compound leaf-springs 10, four in number and arranged in pairs at the ends of the bolster, as shown in Fig. 1, and on opposite sides of the same. These compound springs consist each of a flat spring-metal strip or plate bent back on itself and forming two oppositely-curved arms 9 and 11, which springs are arranged end to end, with their adjacent ends embracing and being mounted on cross-bars 12, sustained on the lower ends of hangers 13, depending from the parallel frame-bars 4 at the center of the same. These hangers consist each of a U-shaped casting 13^a, Fig. 7, which is bolted to the outer side of the bar 4, and vertical plates 13^b, bolted at their upper ends to the inner side of the bar 4 and having their lower ends connected with the lower corners of the U-shaped casting by the cross-bars 12, before alluded to. This construction constitutes a rigid and firm bearing for the inner adjacent ends of the springs and maintains them fixedly with relation to each other and with relation to the bed-frame.

The lower arms 11 of the several springs are mounted loosely on horizontal projecting ends of shackle-bolts 14, Fig. 3, which bolts are in the form of double cranks mounted in bearing-plates 15, Fig. 5, resting on the bolster, which cranks extend downward at the sides of the bolster and then outward to receive the ends of the spring-arms 11.

The several shackle-bolts are connected with the overlying bed-frame by toggle-links 16, one set for each spring, and as these links are identical in construction a description of one will suffice.

The links each consist of a lower member 17, Fig. 8, which is passed loosely over the projecting end of the shackle-bolt at the outer side of the spring and is confined thereon by means of a shackle-cap 18, Fig. 6, which fits over the end of the shackle-bolt and is held thereon by a cotter-pin 19, passed through

the cap and inclosed end of the bolt. The upper end of this member of the link is jointed to the lower end of the upper member 20 on an axis 21, and the upper end of this member 20 is jointed to the side of the downwardly-bent end of the cross-plate 5 by a horizontal transverse bolt 28, extending inward through the bar 4 to its inner side, where it is provided with a nut.

The outer edge of the upper end of the lower member is bent over laterally in the form of a lip 22, which when the links are extended contacts with the edge of the upper member above the axis 21 and constitutes a stop which limits the movements of the links. The relation of this lip to the axis and edge of the upper member of the link is such that the links are allowed to open only to the extent indicated in Fig. 1, so that the springs are prevented from rebounding to an undue degree.

The bearing-plates 15, in which the shackle-bolts have a bearing, consist each of a single piece of sheet metal which is bent or folded back on itself, forming a base-piece 24, which rests on the bolster, and an overlying piece 25, which is bent upward to form a bearing or socket 26 for the shackle-bolt. The two plates 15 are connected together by a tie-strap 27, having its ends fastened to the plates by bolts or rivets 27^a and 27^b, the former passing through the strap, the upper piece 25, and lower piece 24 and the latter passing through the strap and lower piece.

From the construction described it will be seen that while the adjacent folded ends of the springs are maintained in fixed relations their upper outer ends are permitted to slide freely in the guide-clips, so that a greater degree of elasticity is obtained without liability of breakage. The toggle-links constructed as described limit the rebound to about the usual height of the leaves, so that the frequent breaking of springs as a result of excessive rebound is prevented.

By the use of the shackle-bolt cap friction between the parts which it confines is maintained at the proper degree and binding of the parts avoided.

Having thus described my invention, what I claim is—

1. In a vehicle the combination with a bolster of a bed-frame, a pair of compound springs at each end of the bolster, said springs comprising upper and lower arms joined at their inner ends and arranged with their inner ends adjacent to each other, the said springs having the outer ends of their upper arms in sliding engagement with the bed-frame, and the outer ends of their lower arms connected with the bolster, and means for sustaining the inner adjacent ends of said springs fixedly with relation to each other and to the bed-frame.

2. In a vehicle the combination with a bolster, of a bed-frame, a pair of compound springs at each end of the bolster, said springs

consisting of upper and lower arms joined at their inner ends and arranged with said inner ends adjacent, fixed cross-bars on which the inner ends of said springs are mounted, a rectangular rigid frame depending from the bed-frame by which the cross-bars are sustained fixedly with relation to each other and to the bed-frame, shackle-bolts sustained by the bolster and having their outer ends connected with the lower arms of the springs, a link connection between the shackle-bolts and the bed-frame, and a sliding connection between the outer ends of the upper arms and the bed-frame.

3. In a vehicle and in combination with a bed-frame comprising two connected parallel bars, a spring-hanger consisting of a rectangular frame depending from the bed-frame at the outer side of one of the bars, plates depending from the bar at the inner opposite side of the same, cross-bars connecting the lower ends of said plates with the lower ends of the rectangular frame, springs mounted on said cross-bars and acting respectively on the bed-frame and the bolster.

4. In a vehicle the combination with a bolster, of a shackle-bolt mounted thereon, a leaf-spring mounted on the end of the shackle-bolt, a bed-frame, a toggle-link mounted at its lower end on the shackle-bolt at the outer side of the spring and connected at its upper end to the bed-frame, a cap loosely applied to the end of the shackle-bolt at the outer side of the link, and means for confining the cap loosely on the bolt.

5. In a vehicle and in combination with a bolster, a shackle-bolt mounted thereon and having an opening therethrough, a spring mounted on the shackle-bolt, a bed-frame, a toggle-link mounted at its lower end on the shackle-bolt at the outer side of the spring and connected at its upper end with the bed-frame, a cap applied loosely to the end of the bolt at the outer side of the link, and having openings therethrough adapted to register with that in the bolt, and a cotter-pin extending through the openings in the cap and the end of the shackle-bolt and serving to confine the cap on the bolt.

6. In a vehicle the combination with a bolster of a bed-frame consisting of two parallel bars, cross-plates connecting the same at their ends and bent downward at the sides of the parallel bars, springs, toggle-links having their lower ends connected with the springs and their upper ends applied to the downwardly-bent ends of the cross-plates and bolts extending through the links, the downwardly-bent ends of the cross-plates and the bars, and serving as axes for said links.

In testimony whereof I hereunto set my hand, this 20th day of November, 1902, in the presence of two attesting witnesses.

ALBERT BURULL.

Witnesses:

ERLING K. LOVERUD,
T. C. LUND.