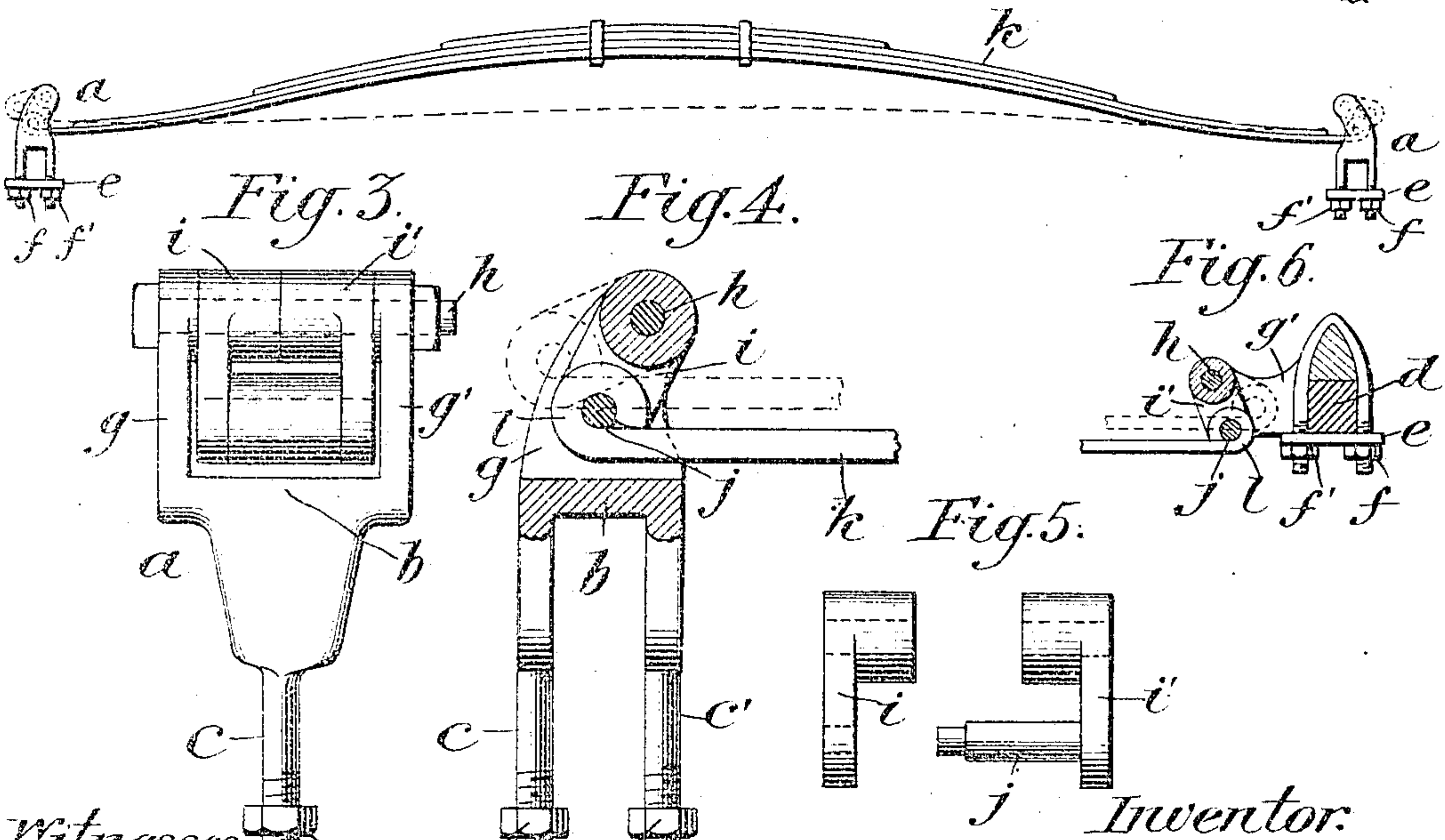
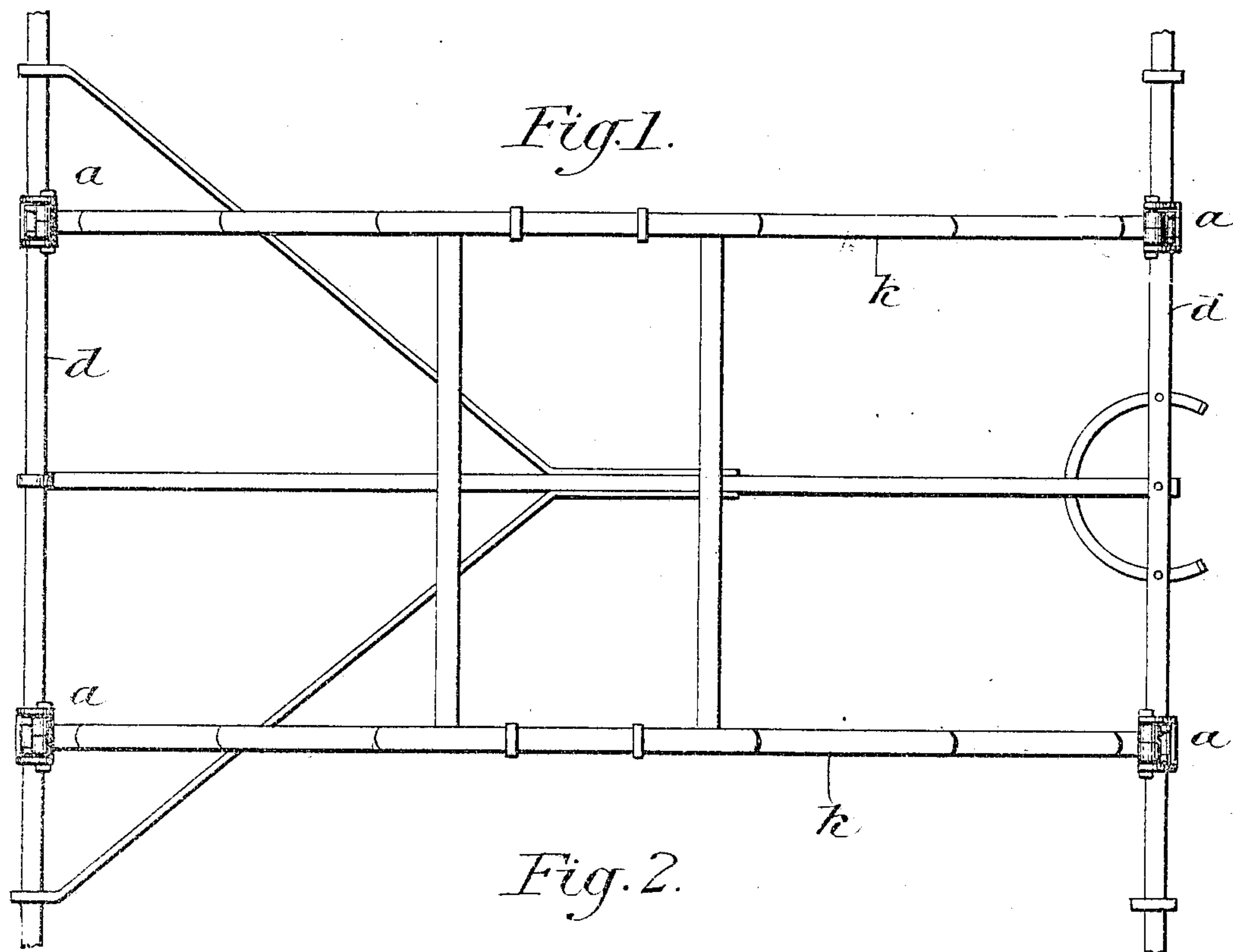


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F. E. GEIBEL.
SPRING SHACKLE.
APPLICATION FILED SEPT. 9, 1904.



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UNITED STATES PATENT OFFICE.

FRED E. GEIBEL, OF MONTGOMERY, ALABAMA.

SPRING-SHACKLE.

SPECIFICATION forming part of Letters Patent No. 787,288, dated April 11, 1905.

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To all whom it may concern:

Be it known that I, FRED E. GEIBEL, a citizen of the United States, residing in Montgomery, county of Montgomery, State of Alabama, have invented certain new and useful Improvements in Spring-Shackles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to spring-shackles for vehicles which shall permit of the elongation and contraction of the spring, thus providing an easy-riding spring which will be less liable to snap or break than the ordinary rigidly-connected springs and also one which will neither work loose nor rattle.

To this end the invention consists in certain features of construction and combination of parts, as will be fully described, and pointed out in the claims.

In the drawings, Figure 1 is a view in plan of the underframe of an ordinary vehicle, showing the front and rear axles and the two side springs attached thereto by means of my improved shackles. Fig. 2 is a side elevation of one of the springs and its shackles detached. Fig. 3 is an end view, in elevation, of one of the shackles detached. Fig. 4 is a side view, partly in section, of one of the shackles detached, showing in full lines a portion of the spring in its normal position and in dotted lines its position when weighted. Fig. 5 is a detached view in elevation of the two members of the shackle-link; and Fig. 6 is a side view, partly in section, of a modified form of shackle.

Referring to the drawings, *a* denotes the body of the shackle, this body being in the form of a yoke having a base *b*, provided with integral depending screw-bolts *c c'*, which embrace the axle-stock *d*. The bolts extend a sufficient distance below the axle-stock to receive the follower-plate *e*, which is perforated for that purpose, the yoke being clamped in position upon the axle-stock between the base of said yoke and the plate *e* and held in such clamped position by means of the nuts *f f'*, screwed upon the ends of the bolts *c c'*. The arms *g g'* of the yoke are preferably made in-

tegral with the base *b*. They project upward from the base substantially parallel one with the other and the arms for the two springs of each shackle extending inwardly toward each other, as shown in Figs. 2 and 4, so as to bring the point of suspension of the links *i i'* inside of the vertical plane of the shackles, and the links *i* and *i'* extending laterally away from each other and normally (that is, when the springs are not weighted) hanging at an angle of about thirty degrees from a vertical plane through the point of suspension.

A link or member of the shackle is provided, which is loosely supported on a bolt *h*, that passes through and is secured in the free ends of the arms *g g'* of the yoke. The link consists of the two members *i i'*, each having an inwardly-projecting half-sleeve through which the said bolt *h* passes for connecting the two members together and securing the shackle-link to its support and the member *i'* having the pivot-pin *j* formed integral therewith, the free end of the pivot-pin being so formed as to enter the perforated end of the member *i* and be upset therein, so that the two members are held rigidly together in substantially the positions shown in Fig. 3 of the drawings.

The spring *k*, which is of the usual form, is here shown as provided with an eye *l* transversely of its end, which is adapted to be fitted upon the pivot-pin *j* of the shackle-link. The springs when properly mounted in place upon the vehicle normally take a position substantially that shown in full lines in Fig. 2, in which position they are of the same length as the distance between the centers of the axles. However, when the springs are weighted they will take a position substantially as shown by dotted lines in the same figure, thus lengthening the springs and forcing the shackle-links at the ends of each spring in opposite directions, and thereby tightening the connections between the shackles and the springs, which prevents any rattling of the different parts.

It is to be noted, as has heretofore been stated, that the shackle-links *i* and *i'* extend laterally away from each other and normally hang at an angle of about thirty degrees from a vertical plane through their respective points of suspension, which position is the

position they take when the vehicle-springs are not weighted, and it will also be noted that as soon as the springs are weighted the links take a position substantially as shown in dotted lines in Figs. 4 and 6, in which position they project at an angle of about forty-five degrees from the vertical through the points of suspension. In this last-mentioned position of the links the ends of the springs will lie very near the horizontal plane, passing through the points of suspension, and from this it will be seen that very little, if any, longitudinal movement of the springs in one direction or the other can occur. It will be further noted that in respect to Fig. 2 the points of suspension of the links *i* and *i'* are inside the vertical plane of the shackles and that the end of the springs normally lie in vertical planes passing centrally through the axles and shackles. Thus it will be seen that as the vehicle is weighted the ends of the springs will be carried outside the vertical plane of the shackles and axles, so that the pull on either side of the axle will be the same and the axle prevented from partially rotating when the vehicle is weighted, which would otherwise give unnecessary wear and tear to the axles.

In Fig. 6 of the drawings is shown a somewhat modified form of shackle wherein the arms *g g'* of the yoke extend in a horizontal direction instead of a vertical one, and this is for the purpose of providing for the mounting of the springs nearer the ground. In other respects the shackle is identical with that heretofore described, and it is to be noted that the arms *g g'* in this construction do not project straight out from the shackle, but extend upwardly, so as to bring the point of suspension of the links *i i'* above and out of the central plane of attachment of the shackle to the axle.

It is apparent that in carrying out my invention some changes from the combinations herein shown and described may be made, and I would therefore have it understood that I do not limit myself to the precise details herein illustrated.

Having thus described my invention, what I claim is—

1. A shackle for vehicle-springs, comprising a yoke adapted for attachment to the axle and a spring-supporting link suspended from a pivot-pin in the arms of the yoke, said link consisting of two side pieces each having an inwardly-projecting half-sleeve at its upper end, and a pivot-pin for the spring secured to the lower end of the pieces.

2. A shackle for vehicle-springs, comprising a yoke adapted for attachment to the axle, a spring-supporting link suspended from a

pivot-pin in the arms of the yoke, said link consisting of two side pieces each having an inwardly-projecting half-sleeve at its upper end, and one of said pieces having a pivot-pin for the spring formed integrally therewith and adapted to connect with the other piece.

3. A shackle for vehicle-springs, consisting of the yoke *b*, having arms *g, g'*, projecting outward and laterally therefrom, a spring-supporting link suspended from the yoke-arms by a pin *h*, and a pin *j* at the lower end of the link for connection to the vehicle-spring, said link consisting of side pieces *i, i'*, each having integrally formed therewith a half-sleeve bearing for the pin *h*, and the pin *j* being integrally formed with one of said side pieces and fitting in an eye in the other.

4. In a side spring-vehicle, the combination with the axles, of a vehicle-spring, shackles comprising yokes projecting upwardly from the said axles and extending laterally inward toward each other, and a longitudinal spring suspended at each end by links from the inward-turned ends of the yoke-arms, said links depending at an angle to the vertical so that normally the ends of the spring will lie in vertical planes passing centrally through the axle and shackles.

5. In a vehicle-spring, the combination with the axles, of shackles secured to the axles, and a longitudinal spring suspended at each end by a link from the shackle so that normally the ends of the spring will be outside of vertical planes passing centrally through the points of suspension of the links, whereby as the spring is weighted the ends will move still farther outward from these vertical planes and at the same time be lifted into close proximity to the horizontal plane through the points of suspension.

6. In a vehicle-spring, the combination with the axles, of shackles comprising yokes projecting upwardly from said axles and extending laterally inward toward each other, spring-supporting links suspended from the yoke-arms at points inside the center line of the shackles, and a spring suspended at each end by the links so that normally the ends of the spring will be in vertical planes passing centrally through the axles and shackles, but when the spring is weighted its ends will be carried outside the vertical plane of the axles and shackles, thereby equalizing the weight on both sides of the axle.

In testimony whereof I affix my signature in presence of two witnesses.

FRED E. GEIBEL.

Witnesses:

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