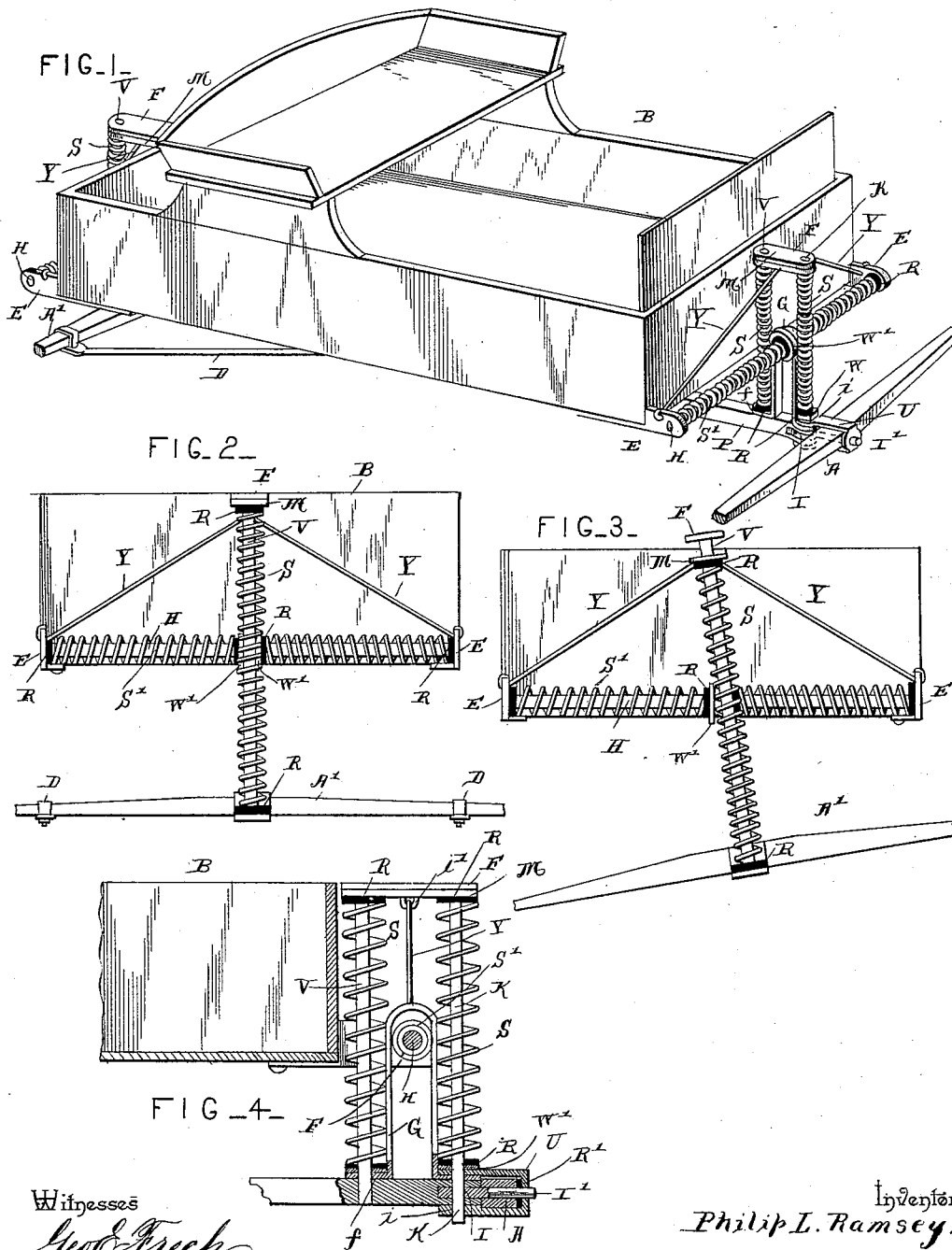


(No Model.)

P. L. RAMSEY.
VEHICLE SPRING GEAR.

No. 454,768.

Patented June 23, 1891.



Witnesses

Geo. E. Truch.

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By his Attorneys,

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UNITED STATES PATENT OFFICE.

PHILIP L. RAMSEY, OF SCHOCHOH, ASSIGNOR OF ONE-HALF TO G. T. MORGAN,
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VEHICLE-SPRING GEAR.

SPECIFICATION forming part of Letters Patent No. 454,768, dated June 23, 1891.

Application filed April 4, 1891. Serial No. 387,659. (No model.)

To all whom it may concern:

Be it known that I, PHILIP L. RAMSEY, a citizen of the United States, residing at Schochoh, in the county of Logan and State of Kentucky, have invented a new and useful Vehicle-Spring Gear, of which the following is a specification.

This invention relates to carriages and wagons, and more especially to the springs thereof; and the object of the same is to produce an improved arrangement of springs, whereby the wagon or carriage body will be firmly supported, but yet permitted a greater degree of motion than formerly, over rough roads.

To this end the invention consists of the details of construction hereinafter more fully described and claimed, and as illustrated on the accompanying sheet of drawings, wherein—

Figure 1 is a general perspective view of a buggy provided with my improved springs, but with the wheels removed and showing more particularly the front axle and king-bolt thereof. Fig. 2 is a rear elevation of the same. Fig. 3 is an elevation similar to Fig. 2, but showing the axle tipped as when one wheel passes over an obstruction. Fig. 4 is a central longitudinal section of the front end of the body, showing its springs.

Referring to the said drawings, the letter B designates the body of the carriage or wagon, A A' the axles, P the perch connecting them, and D the hounds, all these parts being of the usual or of any preferred construction.

The front end of the perch P is bifurcated, and in this bifurcation is mounted an eye I upon a vertical king-bolt K. Above and below the perch are located eyes *i*, which are at the rear end of the U-shaped arm U, the stem I' of the eye I extending forwardly and being secured to the bend of this arm U. Mounted pivotally on the stem is the front axle A, which, as seen, extends through the arm U. By this arrangement the axle is permitted to oscillate in a vertical plane upon said stem and to turn with the U-shaped arm on the king-bolt K, as is desirable in ordinary travel.

At the ends of the perch P are arranged vertical rods V in pairs, the front rod of the front pair preferably being a continuation of the king-bolt K, above described, and the up-

per ends of these rods are connected by flat plates F. Beneath these plates are arranged movable plates M, having eyes in their ends which slide upon said vertical rods, and on the latter are arranged strong expansive coiled springs S, which rest at their lower ends upon the perch (the front one resting upon a washer W above the upper eye *i* of the U-shaped arm U) and bear at their upper ends beneath the plates M. The latter are provided at their centers with depending eyes *i'*, in which are hung the centers of yokes Y, whose arms extend thence downwardly and outwardly, as shown.

Secured to the bottom of the body at its four corners are straps which extend outwardly and form ears E, and these ears are connected across the ends of the body by horizontal rods H, and to these ears are also connected the lower ends of the yokes Y.

G G are vertical loops or guides having outwardly-projecting feet *f*, which are mounted upon the vertical rods, as shown, the bodies of these guides rising for some distance between the members of the pairs of vertical rods, and through these guides the horizontal rods H pass loosely. Upon the latter are mounted strong expansive coiled springs S', their outer ends bearing against the inner faces of the ears E and their inner ends bearing against washers W', loosely mounted upon the rods H at each side of the guides G. The rear axle A' passes directly through the rear-most guide G, and is secured therein in any suitable manner, while the front axle A is pivotally mounted, so as to have both a horizontal and a vertical swinging motion.

With the above construction of parts the weight of the body will be imparted through the ears E, the yokes Y, and the eyes *i'* to the plates M, and by the latter brought upon the upper ends of the vertical springs S, and if these springs are of proper flexibility the body will ride very comfortably over an ordinary road. When one wheel passes over an obstruction, as seen in Fig. 3, one end of the axle will be raised, which will throw the rods V out of a vertical position; but as the upper ends of these rods are connected by the yoke Y with the body it is obvious that the centers of these rods must move longi-

tudinally of the horizontal rods H. This movement is permitted by the springs S', and at the same time the cushioning effect of the vertical springs is not interrupted. Hence
 5 the body B will always stand level, even though one wheel may pass over an obstruction nearly or quite a foot in height.

I do not limit myself to the exact details of construction shown and described in this ap-
 10 plication, as considerable change may be made therein without departing from the spirit of my invention. For instance, the specific means by which I pivot the front axle so as to permit its vertical as well as its hori-
 15 zontal motion may be useful by a slight adaptation of parts in other connections, although I prefer to employ it here, and the rubber buffers or washers R, which I should have said are employed at each end of each of the
 20 springs, might be omitted, although their use causes the device to be practically noiseless.

What is claimed as new is—

1. In a device of the character described, the combination, with the perch having a bi-
 25 furcated front end, an eye pivoted therein on the king-bolt and having a forwardly-extending shank, and a U-shaped arm having eyes at its rear end pivotally mounted on said king-bolt above and below the perch, the front
 30 end of said shank being connected with the bend of the arm, of the front axle extending through said arm and pivotally mounted on the shank, as and for the purpose set forth.

2. In a device of the character described, the combination, with the perch, vertical rods
 35 rising therefrom in pairs and connected by plates at their upper ends, and the body standing between said pairs, of coiled springs on said rods, moving plates above their upper
 40 ends below the connecting plates, eyes depending from the centers of the moving plates, and yokes connected at their centers to said eyes and at their lower ends to the corners of the
 body, as and for the purpose set forth.

3. In a device of the character described, the combination, with the perch, vertical rods
 45 rising therefrom in pairs and connected by flat plates at their upper ends, moving plates having eyes loosely mounted on said rods, a coiled spring between the perch and each
 50 moving plate and upon each rod, a depending eye at the center of each plate, and vertical guides rising from the perch between the lower ends of each pair of rods, of a body mounted
 55 between said pairs of rods, ears at the four corners of said body, horizontal rods connecting said ears at the ends of the body and passing through said guides, a yoke at each end of the body connected at its ends to said ears
 60 and at its center to said depending eye, wash-

ers on said horizontal rods at each side of each guide, and a coiled expansive spring between each washer and eye on the horizontal rods, all as and for the purpose set forth.

4. In a device of the character described, 65 the combination, with the perch, vertical guides rising therefrom, a body between said guides, and springs, substantially as described, for cushioning the vertical movement of the body, of ears at the four corners of the body, 70 horizontal rods connecting said ears in pairs across the ends of the body and extending through said guides, washers on said rods adjacent the guides, and a coiled expansive spring on said rod between each washer and 75 eye, as and for the purpose set forth.

5. In a device of the character described, the combination, with a perch having a bifurcated front end, a king-bolt passing there-
 80 through and rising vertically therefrom in front of the wagon-body, an eye pivoted in said bifurcation upon the king-bolt and having a forwardly-extending shank, a U-shaped arm having eyes at its forward ends pivotally mounted on the king-bolt above and be-
 85 low the perch, the front end of said shank being connected with the bend of the arm, and the front axle extending through said arm and pivotally mounted on the shank, of a moving plate upon said king-bolt, an expansive 90 spring between the upper eye of said U-shaped arm and said moving plate, and connection between the latter and the wagon-body, all as and for the purpose set forth.

6. In a device of the character described, 95 the combination, with the perch, vertical rods rising therefrom in front and in rear of the body, moving plates mounted loosely on said rods, and springs between said plates and perch, of connections, substantially as de-
 100 scribed, between said plates and body, as and for the purpose set forth.

7. In a device of the character described, the combination, with the perch, vertical rods
 105 rising therefrom in front and in rear of the body, moving plates mounted loosely on said rods, springs between said plates and perch, and vertical guides rising from the latter, of ears at the corners of the body, connections between said ears and plates, and expansive 110 springs between said guides and ears, all substantially as and for the purpose hereinbefore set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 115 presence of two witnesses.

PHILIP L. RAMSEY.

Witnesses:

M. B. MORTON,
 J. H. MORTON.