

No. 616,497.

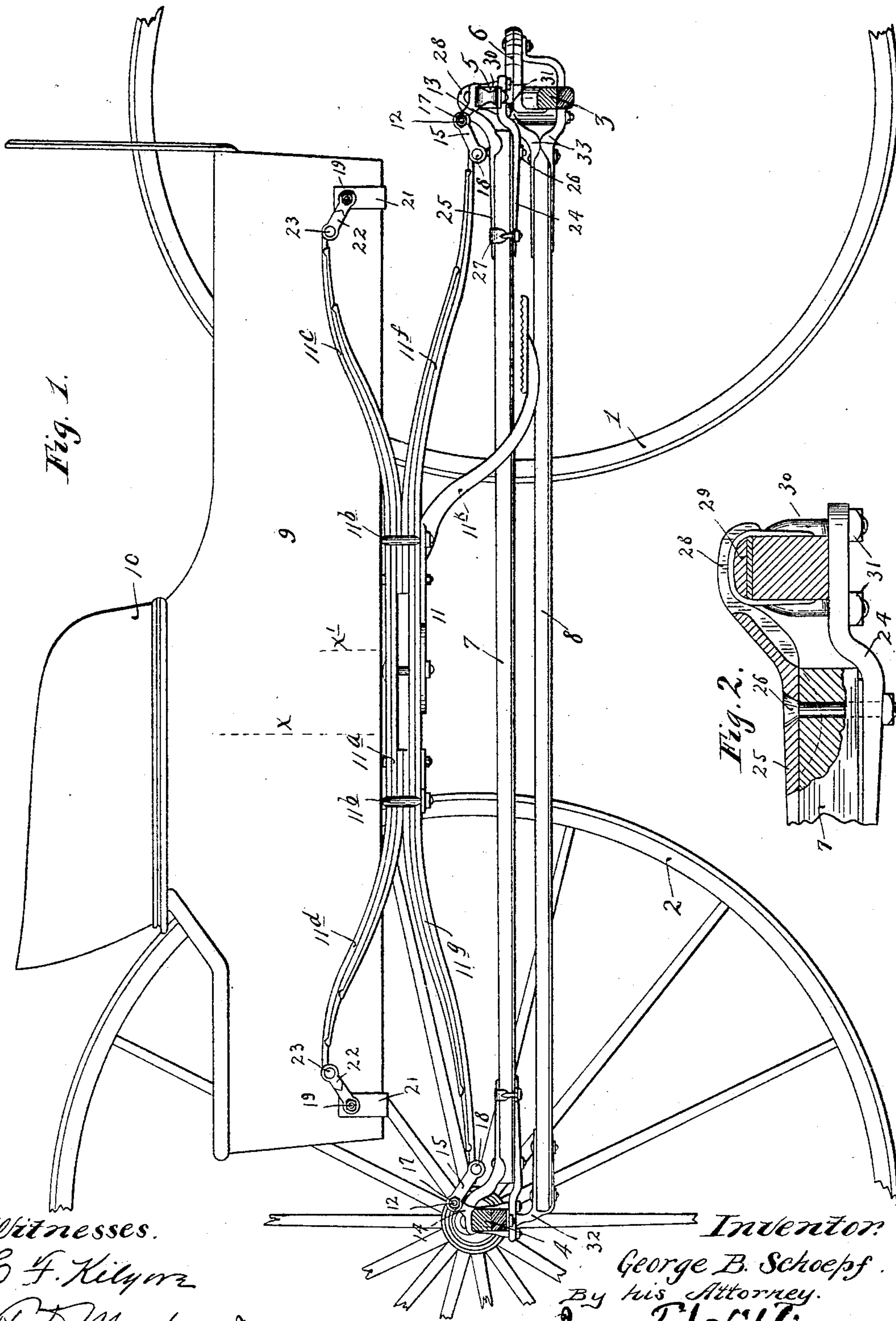
Patented Dec. 27, 1898.

G. B. SCHOEPP.
ROAD VEHICLE.

(Application filed Jan. 17, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.

C. F. Kilyorn

R. D. Merchant

Inventor:

George B. Schoepf.

By his Attorney.

Jas. F. Williamson

No. 616,497.

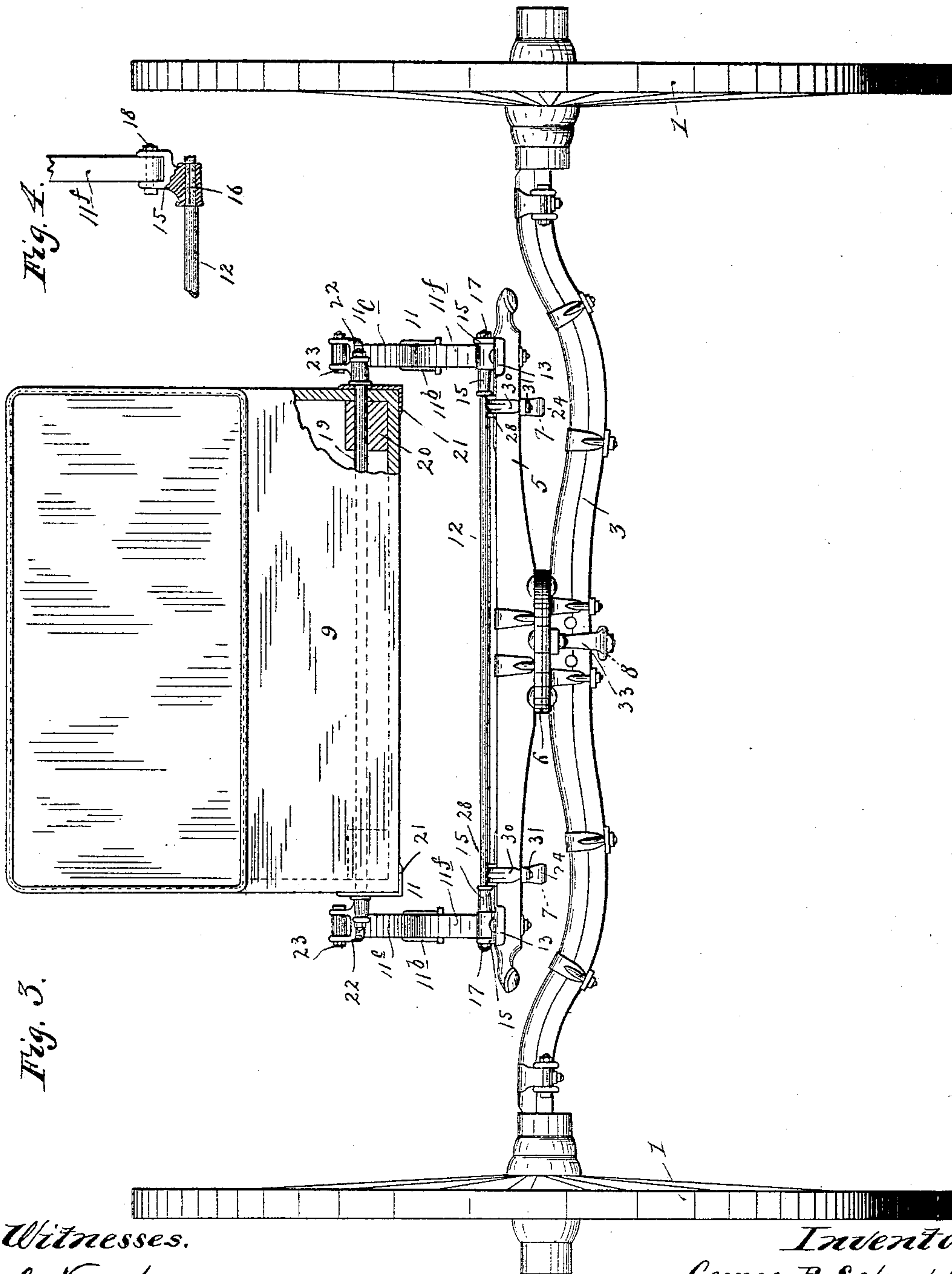
Patented Dec. 27, 1898.

G. B. SCHOEPP.
ROAD VEHICLE.

(Application filed Jan. 17, 1898.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses.

C. F. Kellogg

E. D. Murchant

Inventor.

George B. Schoepf.

By his Attorney.

Jas. F. Williamson

UNITED STATES PATENT OFFICE.

GEORGE B. SCHOEPEF, OF MINNEAPOLIS, MINNESOTA.

ROAD-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 616,497, dated December 27, 1898.

Application filed January 17, 1898. Serial No. 666,856. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. SCHOEPEF, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Road-Vehicles; 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.

My present invention has for its object to improve road-vehicles of the general character disclosed in my two prior patents—to wit, Patent No. 364,862, issued June 14, 1887, and No. 431,403, issued July 1, 1890. In other words, my present invention relates particularly to the improvement of road-vehicles wherein the body is supported from the running-gear by means of double reversed side springs connected by means of equalizing-bars.

More specifically stated, my invention relates, first, to an improvement in the springs themselves and in their relation to the body of the vehicle, whereby said body is suspended in such manner when loaded that it will vibrate straight up and down or will be free from endwise rocking movements, this being accomplished with the seat located far enough back on the body to prevent cramping of the occupants' legs; second, it relates to an improved means for connecting the reach-bars to the rear axle and to the head-block, whereby said connected parts are braced and positively held against rotary vibrations under the torsional strains put upon the same by the weight of the load as transmitted through the springs, and, third, it consists in other novel details of improvement whereby without lengthening the running-gear or shortening the body or box said body or box may be dropped or supported in a lowered position.

The preferred form of my invention embodying the points of improvement above noted is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a side elevation showing a road-vehicle or buggy constructed and equipped in accordance with my invention, some parts of the vehicle being broken away. Fig. 2 is

a detail view, partly in side elevation and partly in vertical longitudinal section, showing the manner of connecting one of the reach-bars to the head-block and to the rear axle. Fig. 3 is a front elevation, with some parts broken away, of the vehicle shown in Fig. 1; and Fig. 4 is a plan view, with some parts broken away, showing in detail the connection between one of the springs and the co-operating equalizing-rod.

Of the parts of the vehicle, 1 indicates the front wheels; 2, the rear wheels; 3, the front axle; 4, the rear axle; 5, the head-block; 6, the "fifth-wheel;" 7 8, the reach-bars; 9, the body or box; 10, the seat, and 11 the double reversed springs.

The springs 11 are formed with rigid central portions 11^a—that is, portions which have little or no spring action and which extend between the clips 11^b. These rigid sections 11^a are in length approximately one-third of the entire length of the upper springs, and the forwardly-projecting leaves 11^c are considerably longer—for example, two inches—than the rearwardly-projecting leaves 11^d. The forwardly-projecting leaves 11^f are in about the same proportion longer than the rearwardly-projecting leaves 11^g of the lower springs. These approximate dimensions of the sections of the springs are of the greatest importance, as will be hereinafter clearly brought out.

12 indicates the lower pair of equalizing-rods, which are mounted in brackets 13 and 14, rigidly secured, respectively, to the top of the head-block 5 and the rear axle 4. The ends of these equalizing-bars 12 are provided with inwardly-projecting bifurcated arms 15, that are rigidly secured thereon, as shown by means of square shanks 16 and nuts 17 on said rods 12. The ends of the spring-leaves 11^f and 11^g are provided with eyes, by means of which and small nutted bolts or pins 18 they are pivotally connected to the free ends of the arms 15 in the ordinary manner.

The upper pair of equalizing-rods 19 are in my present construction and for a particular purpose passed directly through the body or box 9 at points near its ends and a considerable distance above its bottom. As shown, said rods 19 are also passed through bearing-blocks 20 and outside brackets or straps 21,

both secured to the box 9. At their outer ends the equalizing-bars 19 are, in a similar manner to the rods 12, provided with rigidly-secured and intumed bifurcated arms 22, the free ends of which are pivotally secured by bolts or pins 23 to eyes formed at the ends of the wings 11^c and 11^d. 11^k indicates a step which, as shown, is secured to the central portion of one of the side springs.

It is obvious that inasmuch as the springs are connected to the head-block and rear axle at points eccentric to the axes of the same torsional strains will be put onto the said parts. In practice I have found that with the ordinary construction, wherein the reach-bars are connected to said head-block and rear axle by single reach-irons, the intense torsional strains put upon the parts noted will cause them to spring or rotate slightly and will sooner or later bend or break the reach-irons.

The second feature of my present invention, which will now be described, is directed to a remedy for the above-noted defect. The preferred construction comprises the following details: 24 indicates reach-irons and 25 indicates top brackets that are rigidly secured, respectively, to the bottoms and tops of the ends of the side reach-bars 7, as shown, by means of nutted bolts 26 and nutted clips 27. In the one case the ends of the reach-irons 24 engage the bottoms of the head-block 5, and the projecting ends of the brackets 25 engage over the tops of the same part. The ends of the brackets 25 are bifurcated or provided with prongs 28, that are connected by a cross rib or flange 29, the latter of which engages directly on the top of said head-block or rear axle, as the case may be. U-shaped clips 30 are placed straddle of the said block and axle and of the cross ribs or flanges 29 of the co-operating brackets 25, and their screw-threaded prongs are passed through perforations in the reach-irons 24 and are provided with nuts 31, which when tightened securely clamp the parts together and onto the head-block or rear axle which the clips embrace. The center reach-bars 8 are dropped below the side reach-bars 7 and are secured at their rear ends to the rear axle by means of a reach-bracket 32, while at their forward ends they are connected by means of a pair of reach-straps 33 to the under section of the fifth-wheel in the ordinary manner. It will be noted that the reach-rods 7 are also dropped below the rear axle and head-block, for a purpose to be presently noted.

We will first consider the importance of the construction referred to as the first feature of my invention. Let the dotted line marked x on Fig. 1 indicate the center of gravity of the body or box 9 when one or more persons are sitting on the seat 10, and let x' indicate the longitudinal center of the side springs. It will of course be understood that to provide a buggy or vehicle of this character which will be easy-running and have a pre-

sentable appearance the total length of the running-gear, as well as of the body or box, is limited, approximately, to dimensions well established. To properly support the body or box, it is necessary to extend the springs approximately from end to end of the same and yet keep the upper equalizing-rod within the limits of the length of the box. To provide an easy-riding buggy with sufficient space in front of the seat, so as not to cramp the occupants' legs, the seat must be thrown back on the box a considerable distance rearward of the longitudinal center of the springs, as illustrated by the dotted lines x and x' in Fig. 1. Under these conditions if the wings at both ends of the springs are equal in length the greatest weight will be thrown on the rear wings and the box will be tilted up in front. If to obviate this defect the rigid or central section of the springs be placed centrally under the center of gravity of the loaded box, the rear wings will be too short to have the proper resilience, and the front wings, on the other hand, will be so long that they will have too much resilience. However, I have found that by making the front wings of the springs longer than the rear wings and locating the springs as entireties with their actual longitudinal centers ahead or forward of the center of gravity of the loaded box I am enabled to mount the box so that it will vibrate with equal ease both from the front and rear, and hence will move straight up and down, or, in other words, will be free from endwise rocking movements. I have also found that the best results will be obtained with springs having central rigid sections that are approximately one-third of the total length of the upper spring-sections. The lower sections of the springs may be considerably longer than the upper sections. By the statement herein made that the central sections of the springs are rigid does not essentially mean that said sections are absolutely unyielding, but that they are the most rigid parts of the springs, and in the construction shown are those parts which are bound together and extend between the wings.

Returning to the second feature of my invention and directing attention particularly to Fig. 2, it will be noted that the head-block as well as the rear axle are connected to the side reach-bars 7 by a trussed or braced construction which will absolutely prevent said block and axle from turning or vibrating axially. Thus it will be noted that to permit the said head-block or axle to turn it would be necessary to cut off or shear the bolts which clamp the parts together—an act which of course in the construction shown is impossible. The reach-irons 24 and brackets 25 cannot be broken or bent, for the reason that the strains thereon are applied endwise thereto, or practically so. Attention is here called to the fact that inasmuch as the wheels are "gathered" in front and bottom any rotation of the rear axle or head-block would destroy

the properly-set gather—an act too objectionable to need any comment.

As before stated, the third feature of my invention consists in a construction whereby the body or box is lowered for the purpose of making the vehicle easier to get into and out of and also for throwing the load as near in line with the axles as possible. As already indicated, this is accomplished by passing the upper equalizing-rods through the body or box, and this necessitates dropping or lowering the reach-bars 7, as previously described, in order to give the body or box as much movement as the spread of the springs will permit. This, it will be noted, is all accomplished without spacing the upper equalizing-rods outward of the ends of the body or box. It will also be noted by reference to Fig. 3 that the front axle is dropped at its central portion, so as to permit the head-block to be lowered, as above described.

It will of course be understood that alterations in the specific details of construction above illustrated may be made without departing from the scope of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a road-vehicle, the combination with the running-gear and body, of the double reversed side springs supporting the body from the running-gear, which springs have the rigid central sections approximately one-third the length of the upper springs, have forwardly-projecting wings that are longer than the rearwardly-projecting wings, and which springs are located with their longitudinal centers forward of the center of gravity of the loaded body, and equalizers connecting the upper springs to the vehicle-body, and the lower springs to the running-gear, all substantially as and for the purposes set forth.

2. In a road-vehicle, the combination with body-springs connected to the rear axle and head-block, at eccentric points, whereby torsional strains are put upon said parts, of one or more reach-bars provided at their ends with reach-irons or brackets that project from

the tops and bottoms thereof, and are secured, respectively, to the tops and bottoms of said rear axle and head-block, thereby rigidly bracing the same against rotary vibrations, substantially as described.

3. In a road-vehicle, the combination with body-springs connected to the rear axle and head-block at eccentric points, whereby torsional strains are put upon said parts, of one or more reach-bars provided at their ends with the bottom reach-irons 24, and the cooperating top brackets 25 with prongs 28 connected by the transverse ribs or flanges 29, and the U-shaped clips 30 embracing the cooperating ribs or flanges 29, passed through the cooperating reach-iron 24 and provided with nuts 31, substantially as and for the purposes set forth.

4. In a road-vehicle, the combination with the running-gear and body, of the pair of equalizing-rods passed through said body near its ends, with the double reversed side springs connected to said equalizing-rods and to the running-gear, whereby said body is supported, low down, substantially as described.

5. In a road-vehicle, the combination with the running-gear and body, of the pair of equalizing-bars passed through the body near its ends, the double reversed side springs connecting the ends of said equalizing-bars to the running-gear, and the reach-bars connecting the head-block with the rear axle, and dropped below the same, substantially as described.

6. In a road-vehicle, the combination with the running-gear and body, of a pair of supporting-rods passed through said body, one near each end thereof, and the double, reversed springs connecting the projecting ends of said supporting-rods to the running-gear and supporting said body, substantially as described.

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

GEORGE B. SCHOEPP.

Witnesses:

LILLIAN C. ELMORE,
F. D. MERCHANT.