No. 711,576. Patented Oct. 21, 1902.

W. L. MANNING.

SPRING GEAR FOR VEHICLES.

(Application filed Mar. 7, 1902.)

(No Model.)

Fig. 1.

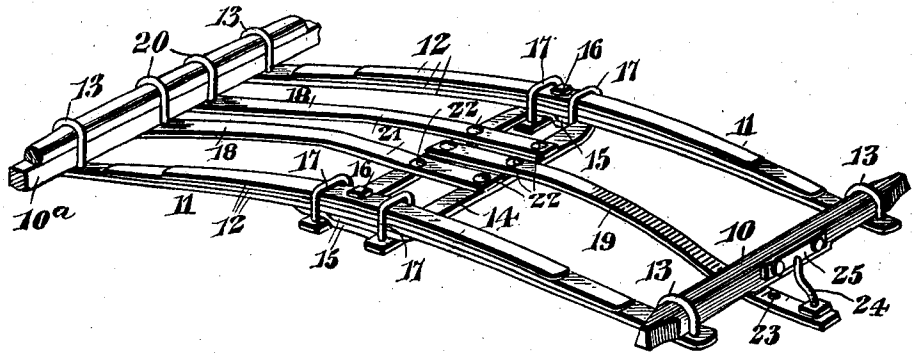


Fig. 3.

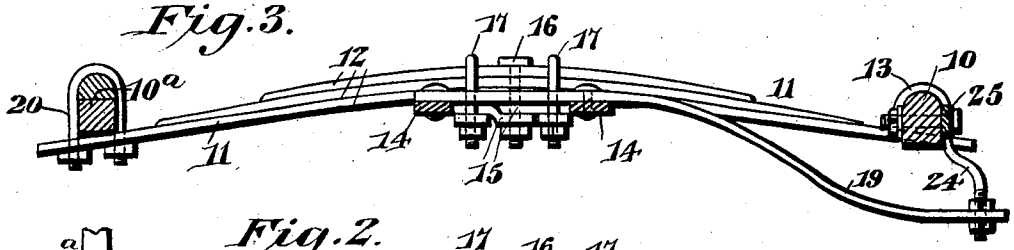


Fig. 2.

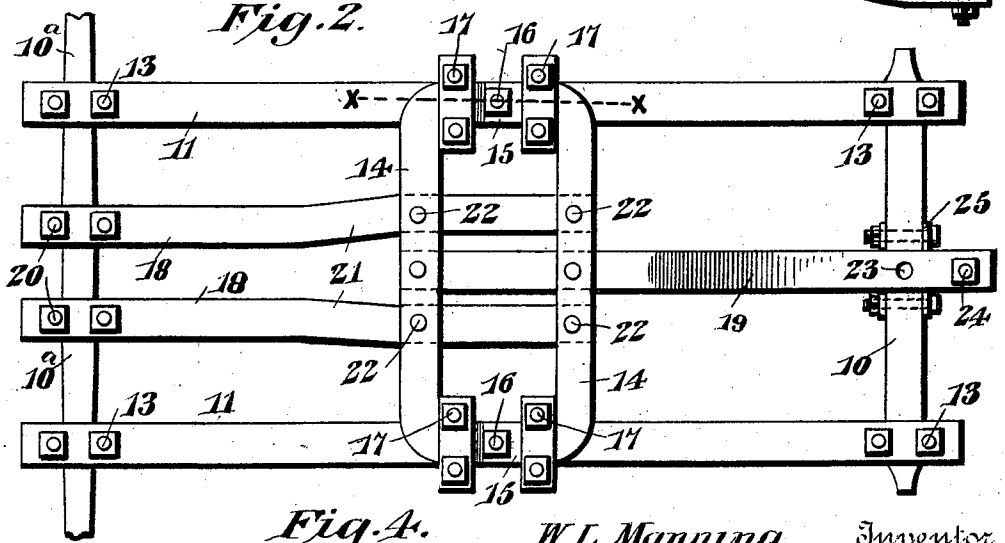
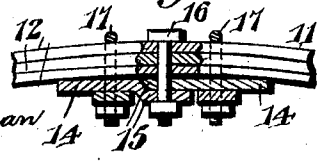


Fig. 4.



Witnesses:
Jas. Ed. McCathran
B. G. Foster.

W. L. Manning, Inventor

By E. G. Siggers

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM L. MANNING, OF WILSON, NORTH CAROLINA.

SPRING-GEAR FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 711,576, dated October 21, 1902.

Application filed March 7, 1902. Serial No. 97,121. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. MANNING, a citizen of the United States, residing at Wilson, in the county of Wilson and State of North Carolina, have invented a new and useful Spring-Gear for Vehicles, of which the following is a specification.

The present invention relates to side-spring vehicles, and particularly the running-gear thereof.

The object of the invention is to provide a spring-reach of novel construction which will withstand rough usage and long wear without getting out of true.

One of the principal features of my invention resides in the peculiar construction of reach and its mode of application. The reach is in three independent sections, the outer ends of the rear sections being clipped rigidly to the rear axle, while the outer end of the front section is fastened to the front bolster, the inner ends of the reach-sections being spaced apart and attached to a transverse brace which connects the side springs of the vehicle, all of the parts being arranged in the same horizontal plane with the side springs, whereby the latter and the spring-reach sections will respond at all times uniformly to the load imposed thereon.

The preferred means for accomplishing this object is clearly shown in the accompanying drawings and described in the following specification.

In said drawings, Figure 1 is a perspective view of the improved structure. Fig. 2 is a bottom plan view of the same. Fig. 3 is a longitudinal sectional view, and Fig. 4 is a detail section taken on the line X X of Fig. 2.

Similar numerals of reference designate corresponding parts in all the figures of the drawings.

In carrying out the invention a pair of spaced supports are provided, in this instance shown in the form of a bolster 10 and rear axle 10^a, which are connected at their opposite ends by side springs 11, said springs being composed of leaves 12, the ends of the springs being secured by clips 13 or other suitable means to the under side of the supports 10. The central portions of the side springs are connected by a pair of spaced substantially parallel independent body-braces 14, made of flat metal, the terminals 15 of which are offset and arranged in overlapping relation against the under faces of the side springs, being secured thereto by bolts 16, said bolts also serving to hold the leaves of the springs in place. The body-braces are furthermore fastened to the springs, preferably by clips 17, which clips are located in the angles formed by the offset ends, which are upwardly bent, as shown in Fig. 4, thereby forming shoulders that prevent the clips working toward each other, the cross-bars 14 serving in like manner to prevent said clips moving away from each other. Reach-sections 18 and 19, made of flat metal, connect the supports and the body-braces. Two of the sections 18 are arranged in spaced relation and are rigidly secured to the under side of the rear axle by means of clips 20. These sections extend in parallel relation to points contiguous to the adjacent body-brace, where they are offset, as shown at 21, the ends being secured by rivets or other devices 22 to the upper side of both braces. The object of offsetting the rear reach-sections is to give additional length thereto, as the offset increases the length and thereby adds to the spring force exerted by said sections. The other section 19, also made of flat metal, is secured to the body-braces between the sections 18 and extends beneath and in front of the front bolster 10, being provided with a pivot-opening 23, which receives the pivot of the front axle or fifth-wheel. This forwardly-projecting end section is connected to the bolster by means of a bracket 24, which, as shown, is preferably provided with a T-head 25, that is bolted to the front face of the bolster.

This structure is very powerful and will not buckle or get out of true even after long usage. This arises from the fact that the two body-braces, though independent, are securely bolted to the side springs, while the reach-sections are fastened to both braces, so that they can have no movement thereon. As a result the front bolster and rear axles, which are secured to the sections, cannot have any relative lateral movement, though the necessary resiliency is maintained. If the gear was constructed of simply the two side

springs 11, it would be too elastic and would soon break by the heavy loads imposed on the vehicle. The addition of the transverse braces 14 would avoid this objection to some extent, but would not go far enough. The addition of the longitudinal flat metal reach-sections 18 and 19, which are attached to the front bolster and the rear axle, gives the requisite stiffness to the side springs without making the same so stiff that they will not respond to the weight of a load.

I am aware that it is old to construct a spring-gear for vehicles consisting of side springs, a transverse brace, and reach-sections; but in every instance with which I am familiar the reach-sections have been arranged diagonally, and in this position said sections will not bend or flex to any material extent, thus making the gear too stiff for practical use. Furthermore, I am not aware that said reach-sections have been clipped rigidly to the rear axle and connected with the front bolster between the side springs and arranged in the same horizontal plane therewith. In all previous constructions of which I have knowledge the side springs have been arranged in a higher plane than the reach-sections. The result of such arrangement is that when a load is placed on a vehicle the side springs yield first, and it is not until a still greater load is added that the reach-sections perform any service—that is to say, when the side springs and the reach-sections are in different horizontal planes a light load affects the side springs only and the reach-sections have little or no work to perform. When, however, a heavy load is placed on a vehicle of that type, the side springs first straighten out and then after they have reached a certain point in their downward movement they tend to pull inward on the axle and bolster, respectively. At that time the reach-sections come into play, and they tend to throw the said parts outwardly. This results in the axle being twisted out of proper position, resulting in the wheels failing to track. I therefore regard as the essential feature of my invention the arrangement of the three reach-sections between the side springs and secured, respectively, to the front bolster and rear axle in the same horizontal plane with said side springs, whereby the springs are stiffened, and at the same time both the springs and the reach-sections will respond uniformly to any load placed on the vehicle.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In vehicle running-gear, the combination with a front bolster and rear axle, of spaced side springs secured rigidly to the under side of and connecting the bolster and axle, transverse body-braces extending across the space between and secured to intermediate portions of the side springs, substantially parallel spaced reach-sections rigidly fastened to both body-braces and to the under side of the rear axle and arranged between the side springs, said reach-sections being arranged in the same horizontal plane as the side springs, and a forwardly-projecting reach-section rigidly attached to the body-braces between the rearwardly-extending sections and rigidly secured to the front bolster.

2. In vehicle running-gear, the combination with a front bolster and rear axle, of spaced side springs secured rigidly to the under side of and connecting the bolster and axle, and composed of a series of leaves, transverse substantially parallel flat metal body-braces extending across the space between and rigidly secured to the under side of intermediate portions of the side springs, substantially parallel spaced reach-sections made of flat metal rigidly fastened to the upper side of both body-braces and to the under side of the rear axle and arranged in the space between the side springs and in the same horizontal plane therewith, and a forwardly-projecting reach-section also made of sheet-metal rigidly attached at one end to the upper side of both body-braces between the rearwardly-extending sections and rigidly secured to the front bolster.

3. In a vehicle running-gear, the combination with a front bolster and rear axle, of spaced side springs rigidly clipped to the under sides of the bolster and axle, separate body-braces extending across the space between the supports and the side springs, said braces having offset terminals the ends of which are overlapped and rest against the under faces of the side springs, means engaging the overlapped ends and the springs to rigidly fasten them together, rearwardly-extending reach-sections rigidly secured at their front ends to both body-braces at separated points, said sections extending to the rear axle and being rigidly clipped to the under side of the same at points between the side springs, a forwardly-extending reach-section secured to both body-braces between the rearwardly-extending sections, and a bracket connecting the forward bolster and the front end of the forwardly-projecting reach-section.

4. In vehicle running-gear, the combination with spaced supports, of spaced side springs secured to and connecting the supports, transverse body-braces extending across the space between the springs, said braces having offset terminals, the ends of which are bent upwardly and overlapped,

said ends resting against the side springs, bolts passing through the overlapped ends and the springs, and clips surrounding the springs and offset terminals between the upwardly-bent portions, said portions constituting stop-shoulders to prevent the movement of the clips toward each other.

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

WILLIAM L. MANNING.

Witnesses:
GEO. HACKNEY,
L. E. BARNES.