

E. P. CARTER.
Vehicle-Spring.

No. 216,939.

Patented July 1, 1879.

Fig. 1.

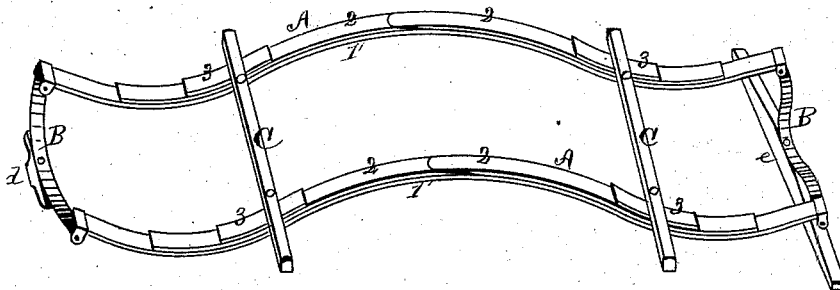


Fig. 2.

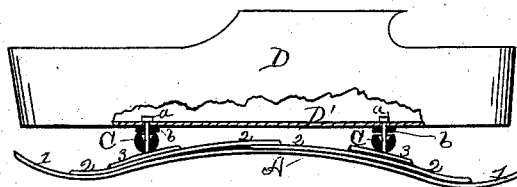
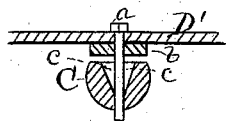


Fig. 3.



Witnesses:

T. H. Parsons
J. R. Drake.

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by J. R. Drake
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UNITED STATES PATENT OFFICE.

EGBERT P. CARTER, OF ARCADE, NEW YORK.

IMPROVEMENT IN VEHICLE-SPRINGS.

Specification forming part of Letters Patent No. **216,939**, dated July 1, 1879; application filed April 12, 1879.

To all whom it may concern:

Be it known that I, EGBERT P. CARTER, of Arcade, in the county of Wyoming and State of New York, have made certain Improvements in Wagons, of which the following is a specification.

This invention relates more particularly to buggies, light wagons, &c., the object of the improvements being to get a more equalized action from the springs than is now generally obtained; also, by the manner of setting the body on the springs to get a sufficient rolling motion when the springs are depressed, and also prevent any unequal weight on any part unduly depressing that part; and the invention consists in the construction and arrangement of the side springs in connection with the half-elliptic end spring, making the spring-platform; also, the construction of the side springs by overlapping the second leaf (which is made in two parts) in the center, the foundation or first leaf being single; also, in conical bolt-holes in the spring-bars where they attach to the bottom of the wagon, and with an interposed piece of rubber acting as a washer or cushion, the conical hole allowing a free rolling motion to the spring-bars, all as fully hereinafter set forth.

In the drawings, Figure 1 is a perspective of the spring-platform; Fig. 2, a side elevation of the body with the spring-bars attached and spring, partly in section; and Fig. 3, a detail in cross-section of the attachment of the spring-bars to the wagon-bottom.

A A represent the two side springs, attached by their ends to the downwardly-bowed end half-elliptic springs, B B, making a spring-platform, the front spring being attached to a bolster, *d*, at the center, and the back spring to the reach or rear axle, *e*, at the center also. Both the end springs are downwardly bowed—that is, the center down and the ends standing upward, thus leaving front, back, and side springs free play.

The side springs are constructed as follows: A single foundation-leaf, 1; then a second leaf made in two parts, 2 2, which overlap in the center, (see Figs. 1 and 2;) then one or more supplementary leaves, 3 3, built up each side of the center, (as in my former patent,) and to which the spring cross-bars C C are attached.

My improvement in the side springs consists in the overlapping of the two second leaves 2 2 in the center. If this were merely a single leaf strengthened in the center, or two whole leaves, 1 and 2, then only a greater stiffness in the center would be obtained; but by making the second leaves in two parts and overlapping them in the center of the whole spring, all the necessary stiffness and elasticity are obtained, combined with a freer action, as, in pressing down, one spring 2 will play over the other 2. This is an important improvement.

These side springs are arched upward in the center and downward toward the ends, the extreme ends curving up where they meet, and are attached to the end semi-elliptic springs. This peculiar arching of these side springs, when united to end springs downwardly bowed in the middle and with upwardly-projecting ends, gives a greatly-improved effect and equalizes the action of all the springs. The arching of the springs in the center will, when pressed down, of course naturally elongate or lengthen the spring; but the counter-arches in the ends take it up, and, in connection with the rocking cross spring-bars C C, prevent undue depression on any part when unequal weight is applied to that part.

The side springs with counter-curves are the same in form as in my former patent; but they were attached to the axle or bolster without any end springs. I believe that the combination of these counter-curved springs, in connection with each half-elliptic springs, is new.

The body D of the wagon is set on the cross spring-bars C C, inside all the springs, and this, with the spring-platform, equalizes the pressure, no matter if overloaded on one side or one end, also making the wagon ride with great steadiness, as well as keeping level under all circumstances. These spring-bars C C are attached to the body by a bolt, *a*, (see Figs. 2 and 3,) through the bottom D; then through an interposed piece of rubber, *b*, or its equivalent, acting as a cushion or washer, also preventing noise and wear; then into a conical vertical hole, *c*, in the spring-bars, coming out at the bottom of the bar, and fastened thereto by a nut or otherwise. This con-

cal hole *c* is very important, as it allows the bar *C* to roll a little every time the springs are pressed down and spring back, thereby taking off the strain that would otherwise be constant if the bolt went through in a straight hole.

I do not claim, broadly, the side springs with supplementary leaves, but only when constructed with the two second leaves of said springs overlapping in the middle, as before explained.

I claim—

1. The side springs having overlapping leaves 2 2 and leaves 3 3, each side spring arched upward in the center, and with counter-curves between the center and ends, in combination with half-elliptic end springs, *B*, forming the spring-platform, substantially as specified.

2. In combination with the foundation-leaf 1 of the side springs, *A A*, the second leaf, formed in two parts, 2 2, the inner end of each overlapping in the center of the spring, whereby a freer action is got, as well as greater stiffness, substantially as specified.

3. In combination with the wagon-body *D* and the side springs, *A A*, the spring cross-bars *C C*, having the conical vertical bolt-holes *c c*, and with the bolt *a* and interposed cushion *b*, all substantially as and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

E. P. CARTER.

Witnesses:

J. R. DRAKE,

T. H. PARSONS.