

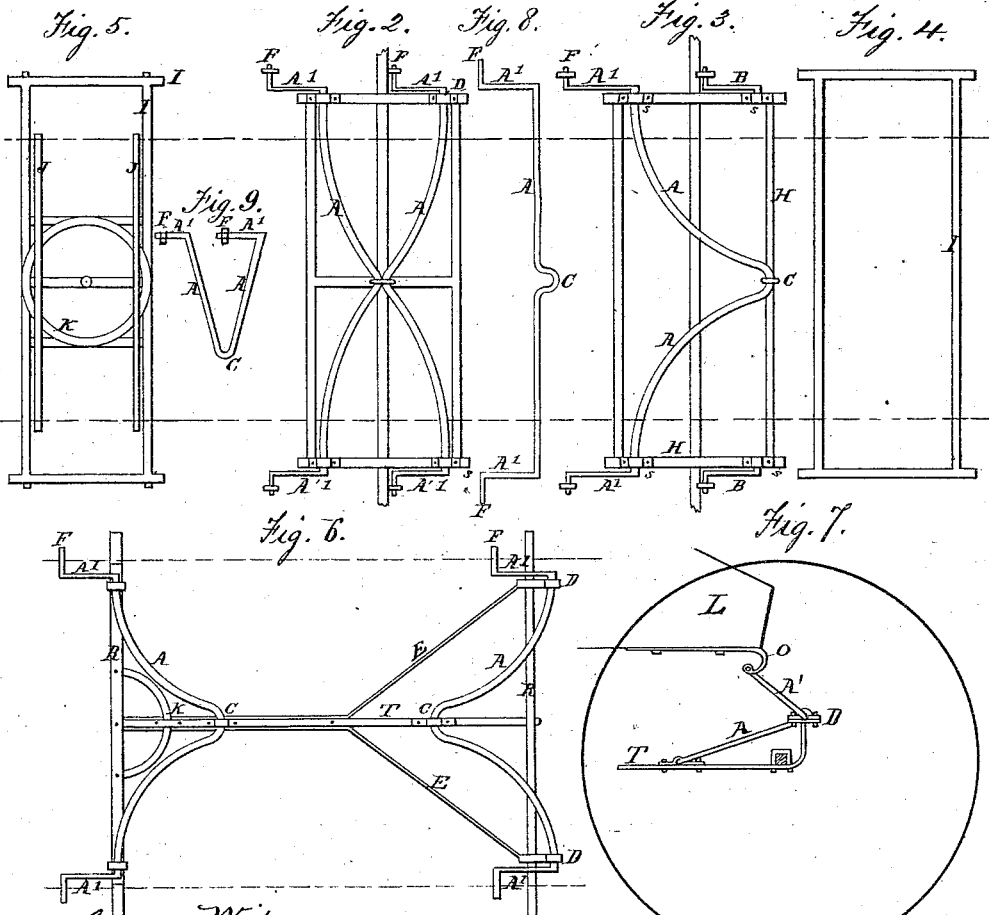
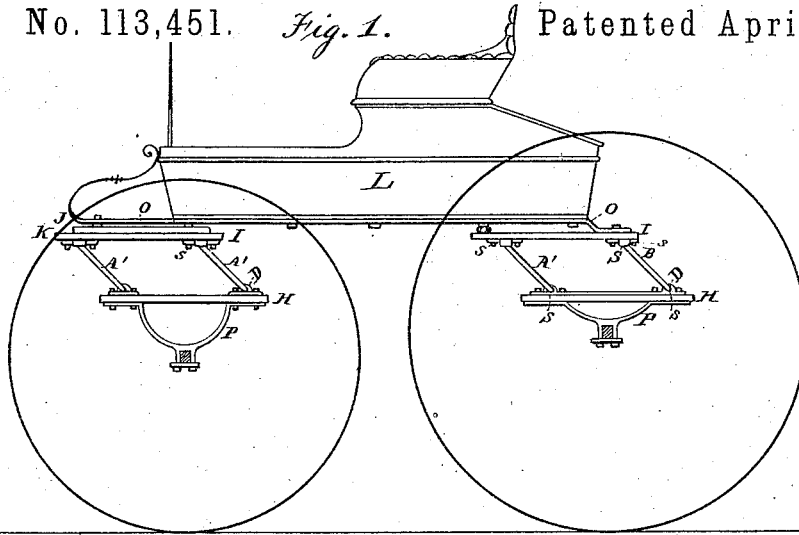
C. W. SALADEE.

Vehicle Spring.

No. 113,451.

Fig. 1.

Patented April 4, 1871.



Witnesses.
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Fig. 10.

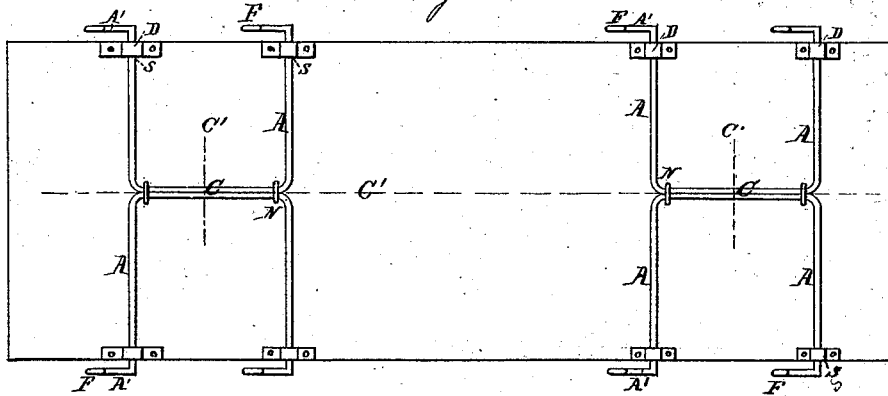
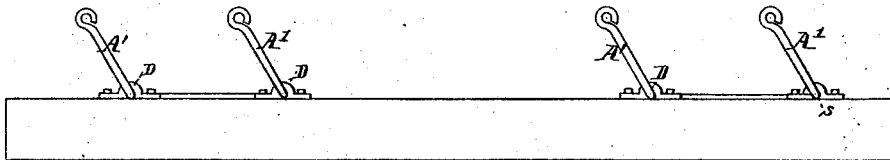


Fig. 11



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CYRUS W. SALADEE, OF ST. CATHARINE'S, CANADA.

IMPROVEMENT IN SPRINGS FOR WHEELED VEHICLES.

Specification forming part of Letters Patent No. **113,451**, dated April 4, 1871.

To all whom it may concern:

Be it known that I, CYRUS W. SALADEE, of St. Catharine's, in the Dominion of Canada, have invented a new and Improved Mode of Constructing Springs for Wheeled Vehicles and other Purposes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

The nature of my invention consists, first, in that of forming the spring of one piece, whether of wood, steel, or brass, and so applied as to get the required elasticity by the twist or torsion of the material from which it is made; second, in that of using two or more of these springs in such manner as to cause them to act or vibrate at the lever ends on parallel lines with each other, and so as to maintain the seat, body, or other plane resting upon them in a perfectly horizontal and parallel position with the ground while in vibrating motion; and, third, in that of operating each spring upon five (5) bearings, for the important purpose hereinafter shown and described.

I will here state that I do not limit my claims to the mere application of my improved spring to wheeled vehicles, as it is equally applicable to bed and chair bottoms; and I contemplate producing an entire new style of chair and bedstead upon the principle of this spring by making the lever ends of the springs to serve as elastic legs, in such manner as to produce a pleasant vibrating motion, as well as to impart a novel and fanciful appearance to either article.

I also propose substituting these springs for the legs or standards now used under the seats in railway-coaches, as well as to place them under the coaches themselves.

In the drawing, Figure 1 represents a side elevation of a buggy, showing the application of my springs and their adaptability to that class of vehicles whose bodies are suspended without coupling or perch between the front and hind axles, or what is more commonly termed "a platform-spring buggy," hung up without perch. Figs. 2 and 3 are top views of the front and back platform over the axles, and showing the arrangement of my spring to this class of work. Figs. 4 and 5 are top

views of the frame resting over the tops of the springs, as seen in Fig. 1. Fig. 6 is a top view of the ordinary buggy-gearing, with perch and iron stays E, with a single spring, A, secured to the hind axle, and in front to spring-bar R, over the front axle, to take the place of the ordinary elliptic springs. Fig. 7 is a side elevation of the back part of the buggy shown in Fig. 6, showing the manner of attaching and supporting my springs in this modification of them. Fig. 8 represents the spring A, having the main stem made perfectly straight between the levers A-1 and the center C, and which is the form best adapted for general application and use.

The different modifications of my spring shown in the drawing are made of one-half inch round steel, whose length between the levers A-1 is about equal to the width of the body L, and which may be bent into the forms shown in Figs. 2, 3, and 6, or left straight between the levers A-1, as seen by Fig. 8.

The object of the curve in the center C is to get a lever purchase and bearing to counteract the pressure on the outer ends of the levers A-1, and so as to firmly and rigidly hold the center C in position, while the outer ends, at S, are allowed to work freely in the bearings D.

The extreme outer end of the spring is bent into the form of a crank or lever, A-1, the required length, and on the end of this is formed the pin F, on which is cut a screw-thread to receive the nut shown in the drawing, Figs. 2 and 3. These levers A-1 are set at an angle of about forty-five degrees, as seen in Figs. 1 and 7.

When my spring is to be used as a platform-spring, as seen in Fig. 1, I may use four (4) springs, or one spring and one pair of parallel arms, B, as seen in Figs. 1 and 3. For this purpose I first provide the wood frame I, (seen in Figs. 2 and 3,) which is supported over the axles by the iron braces P, Fig. 1, and on the top of these frames I secure the springs, or the springs and parallel arms combined, as shown in Fig. 3.

The centers C of the springs are firmly secured to the center of the frame, as shown, and the outer ends, at S, are made to vibrate freely in the iron bearings D.

To the top ends of the cranks or levers A-1,

I secure the top wood frames, Figs. 4 and 5, by allowing the pin F (which is turned at right angles with the crank) to pass into like bearings, S, (seen in Fig. 1,) and there secured by the tap-nut on the end of the pin F, as seen in Figs. 2 and 3. These last-named bearings are secured to the under side of the top frames I, as may be seen in Fig. 1, and on the top of this upper frame I, in front, I secure the ordinary circle or fifth-wheel, on which latter are placed the cross-bars J and J, and across which the front end of the body L is made to rest by means of the body-loops O.

The hind end of the body L is secured to the top of the upper frame I, either by the body-loops O or by allowing the bottom of the body to rest directly on it, and secured in position by bolts passing down through the sills of the body and the frame-pieces I.

The leading features of novelty in my invention, as applied to this class of vehicles, are:

First, that the lever ends A-1 of the torsion-spring A are set on exactly parallel lines with each other, the bearings S, top and bottom, being the same distance apart, on the principle of the parallel rule, and the height of the body and its load vibrating them at the upper ends of the levers in a circular parallel direction, and so that at all points the top and bottom frames I are kept in a perfectly-parallel position with each other.

Second, that the elasticity of the spring is had by firmly securing the center C of the spring A in position, and causing the outer ends, at S, to vibrate by a twist or torsion action upon the main stem A in the same direction. A torsion-spring is commonly secured at both ends and the center left free, while one end is sprung or twisted to the right and the other to the left, so that the ends do not act in the same direction. Torsion-springs are also used by bending the main stem into a V shape and forming cranks or levers on the outer ends, with the points of the levers turned in, and thus secure the twist or torsion of the spring in the same direction; but the construction of a torsion-spring, A, made straight or slightly curved, with the cranks or levers A-1 set at right angles with the main stem A, and parallel with each other, and vibrating in the same direction from the center C, which is firmly held in position, I claim to be an entirely new and valuable feature in torsion-springs, and of my invention; and,

Third, that by reason of the parallel action of the lever ends of the springs with each other a new and desirable vibrating action is imparted to the body of the vehicle and a pleasant motion is given to the passenger, while at the same time the longitudinal concussion sustained by the vehicle's forward passage over stones and other obstacles in the road is most effectually and entirely relieved by this peculiar circular parallel action of the springs.

For certain other purposes than shown in the drawing I contemplate making a parallel-

acting spring, A, with levers A-1, as seen in Fig. 9, by bending the main stem A in a V shape, and setting the levers or cranks A-1 in the same direction, and parallel with each other, with the point of the V firmly held in position, and in every other respect connected and operating as in the other figures shown and described.

In vehicles having gearings with couplings or perch and stays, I purpose using but two springs, one front and one back. The main stem A may be either straight, as seen in Fig. 8, or curved, as seen in Fig. 6, with the center of the spring secured in any convenient and substantial manner, and the outer ends, at S, to rest upon the standard D-1, Fig. 7, which may be formed by a continuation of the rear end of the stay-irons E and E, Figs. 6 and 7; or separate and special standards may be provided and clipped to the axle behind and to the spring-bar R in front. In the top of these standards D is formed the bearing for the outer end, S, of the spring A, so as to allow the latter to work or vibrate freely therein, the same as described in its application to Fig. 1.

The body is suspended upon the outer ends of the levers A-1 by an eye formed in the ends of the body-loops O, as seen in Fig. 1, and which are made to receive the pin F the same as in the other modification, and the same action is had in this application of the spring as in that of Fig. 1.

For springs to seats on farm and lumber wagons I use a straight piece of hard wood, about three feet long by one and a quarter inch square, which I firmly secure in the center upon a suitable frame, and provide the outer ends with the levers A-1, made of iron, with a wide square ferrule tightly driven on, and in the center of each end of the wood drive, or otherwise secure, an iron pin, which is provided with a bearing, D, the same as shown and described in the other applications, and the outer ends of the levers secured and operated as already shown and described. I also purpose using this modification of my spring on the inside of the lower head and foot rails of bedsteads, on which to rest the slatted bed-bottom, and thereby make the cheapest possible form of a most excellent spring bed-bottom. This spring is equally applicable to the inside of chair-frames, to receive the upholstered bottom, and thus produce a durable and pleasant spring-bottom chair.

Another modification of my invention is to form the spring A, as shown by Figs. 10 and 11, with the centers C and C firmly held together by clips N, as seen in these figures. For the heavier class of my springs this method of securing their centers to the frame on which they are operated will be found preferable to either of the other central fastenings shown and described, as in this manner a greater purchase is had against the pressure imposed upon the outer ends, E, of the levers A-1. And to still further simplify the manufacture of these springs, they may be sepa-

rated at the center point, indicated by the dotted line C-1, and the ends at that point held down by a clip wide enough to cover both ends of each spring, or by two clips placed close together.

Now, what I claim as new of my invention, and desire to secure by Letters Patent, is—

1. Forming, securing, and operating torsion-springs by firmly and rigidly holding their center portion C to the frame or base on which they are placed, and allowing their outer ends, at S, to vibrate freely in the bearings D, in combination with the cranks or levers A-1, the outer ends of said levers being hinged or jointed to the frame or body L, substantially as and for the purpose described.

2. The arrangement and combination of the levers A-1 with the springs A and frame or body L, in such manner that they may vibrate on lines parallel to each other, and so as to impart to the frame or body L a parallel circular motion—perpendicularly and longitudinally—like the opening and closing of a parallel rule, substantially as shown and described.

3. The parallel arms B and B, in combination with the spring-levers A-1, as and for the purpose set forth.

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Witnesses:

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