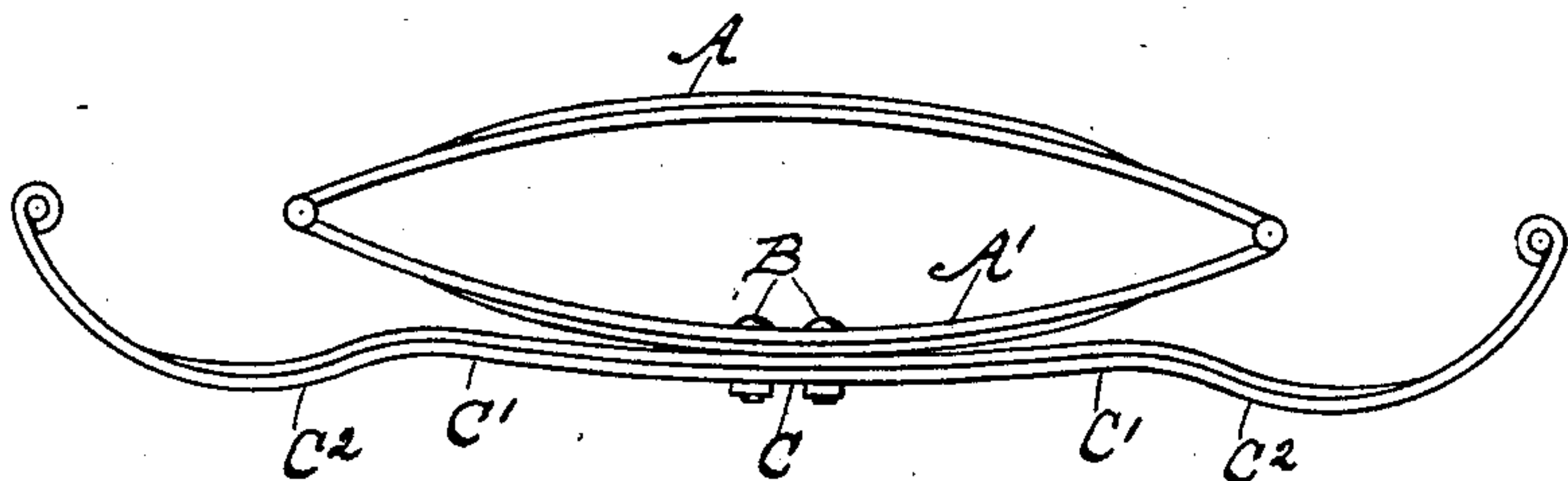


(No Model.)

G. W. FARRELL.
VEHICLE SPRING.

No. 481,394.

Patented Aug. 23, 1892.



Witnesses:
Frank C. Curtis
John T. Booth.

Inventor:
George W. Farrell
by Geo. A. Masher
Atty.

UNITED STATES PATENT OFFICE.

GEORGE W. FARRELL, OF AU SABLE FORKS, ASSIGNOR TO IGNATIUS WILEY, OF ALBANY, NEW YORK.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 481,394, dated August 23, 1892.

Application filed November 9, 1891. Serial No. 411,253. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. FARRELL, a citizen of the United States, residing at Au Sable Forks, county of Essex, and State of New York, have invented certain new and useful Improvements in Vehicle-Springs, of which the following is a specification.

My invention relates to such improvements; and it consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawing and the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the drawing.

The single figure of the drawing represents my improved spring in side elevation.

The elliptic spring A A' is made in the usual well-known manner, with the two halves pivoted together at their ends. The upper half A is adapted to be secured to the vehicle-body in the usual manner, and the lower half A' is secured by clips or by bolts B to a single spring C, the ends of which may be respectively secured in any known manner to the side bars of a vehicle. The spring C is somewhat similar to that class of springs known in the art as "Concord" springs, and is distinguished from those heretofore in use by its triple sweep, which constitutes the leading feature of my invention. This spring curves upwardly from the center toward each end to C', then downwardly to C², and then upwardly to the ends, forming a triple sweep for each half of the spring. The convex side of the lower half of the elliptic spring is secured upon the concave side of the middle portion of the sweep-spring, as shown, whereby the contiguous middle portions of such parts curve in the same direction, causing the two parts to cushion upon each other with less movement than would be required if the contiguous faces were both convex. Such a form and arrangement of springs makes a combination which will auto-

matically accommodate itself to varying loads. If the load is light, the elliptic and sweep-springs are normally in contact only at their middle parts, and the load bearing upon the middle part of the latter spring has the best leverage to cause it to yield, so that the spring will operate freely and easily with a light load. When the load is a heavy one, the middle portions of the springs yield, the convex surface of the lower half of the elliptic spring becoming less convex and the upper surface of the other spring becoming more concave until the surfaces of the two parts engage with each other a sufficient distance from their middle parts to support the load. Such engaging movement of the springs is termed "cushioning." As these parts cushion upon each other the leverage of the load upon the sweep-spring, as well as upon the lower half of the elliptic spring, is very materially reduced, whereby the yielding capacity of the combined spring under the minimum load remains approximately the same as under its maximum load.

My improved spring is especially adapted for pleasure vehicles, which are employed to carry a varying number of persons, the yielding capacity of the spring being approximately the same with one, two, or more persons in the vehicle.

What I claim as new, and desire to secure by Letters Patent, is—

As an improved article of manufacture, a vehicle-spring comprising an elliptic spring adapted to be secured to the vehicle-body by its upper half and a triple sweep-spring secured at its middle part to the lower half of the elliptic spring and adapted to be secured at its ends to the side bars of the vehicle, substantially as described.

In testimony whereof I have hereunto set my hand this 2d day of November, 1891.

GEORGE W. FARRELL.

Witnesses:

GEORGE A. MOSHER,
FRANK C. CURTIS.