

(No Model.)

J. A. BIRKIMER.

VEHICLE SPRING.

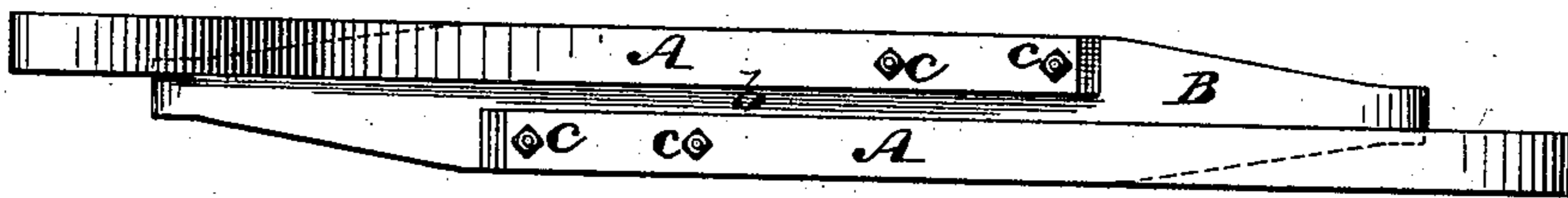
No. 322,574.

Patented July 21, 1885.

Fig. 1.



Fig. 2.



WITNESSES:

John H. Deemer
W. Sedgwick

INVENTOR:

J. A. Birkimer
BY *Munn & Co*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN A. BIRKIMER, OF NEW LEXINGTON, OHIO, ASSIGNOR TO HIMSELF,
ALBERT BRINGARDNER, AND WILLIAM BRINGARDNER, ALL OF SAME
PLACE.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 322,574, dated July 21, 1885.

Application filed December 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, J. A. BIRKIMER, of New Lexington, in the county of Perry and State of Ohio, have invented a new and useful
5 Improvement in Carriage-Springs, of which the following is a full, clear, and exact description.

The invention consists in a certain combination, construction, and arrangement of a
10 single upper and two lower springs, substantially as hereinafter described, and which, in their joint action, have a very soft or easy motion and form an exceedingly even and steady riding spring.

15 Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 represents a side view of a combination-spring embodying my invention, and
20 Fig. 2 is a bottom view of the same.

A A are quarter or less than half elliptical lower springs. These sectional or partially-
25 elliptic springs, which may be made of any number of leaves, and which combined present in lateral appearance a semi-elliptic spring bowing upward but with their inner ends passing each other and their outer ends
30 bending upward, are arranged out of line with each other, or to one side of each other, with a space, *b*, between them, where their inner end portions pass one another, to prevent their rubbing one against the other when working. Said springs are secured by bolts
35 *c*, with or without provision for adjusting them lengthwise to an upper straight or approximately-straight spring, B, which in ordinary cases may be a single-ply one or steel plate, and is of sufficient width to receive and
40 carry beneath it the inner end portions of the laterally-separated partially-elliptic springs A A, arranged in relation with each other as described, and that pass each other in the center portion of the upper spring. The outer
45 ends of the upper spring, B, are drawn or fashioned to suit the body-shackles of the vehicle and to give that part of the spring its proper motion: A combination-spring thus constructed will, when loaded, cause the strain
50 on the lower part to be carried to the opposite

end of the upper part, the one partially-elliptic spring A pressing to the right and the other to the left of the attached upper spring. This will bow up the upper spring in its center and cause the body of the vehicle, how-
55 ever loaded, to be carried level, and by the arrangement of the several springs as described when pressure is applied to the top part of the combined spring the lower part of said spring will yield twice as much, or
60 thereabout, as the upper part, and an improved or enlarged elasticity be given to the whole, superior to that derived from the separate action of the springs under other arrangements. Such combination-spring essentially differs from others in which sectional
65 elliptic springs are used in connection with a crab or coupling for the ends of the springs, and a truss-bar or cross-bearing with a central bearing-clip for connecting the springs to the body-frame; also from others, again, in
70 which a spring-platform is used, the same consisting of flexion springs arranged in pairs and with the inner heavier ends of each pair connected side by side to the central portion
75 of the body or object to be carried, and the flexion portion of the springs curving downward from the center and then upward to their connection with the frame.

In my combination-spring the upper plate
80 is one of the springs, and no crabs or couplings are used at the ends of the springs, but the sectional elliptic lower springs are simply bolted to the upper springs, when or after which the whole is ready for use.

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

The compound-spring comprising the single upper spring widened at its mid length
90 and having narrowed outer portions or ends provided with eyes, in combination with the sectional elliptic lower springs bolted or connected directly to the widened surface of the upper single spring, substantially as shown
95 and described, and for the purpose set forth.

JOHN A. BIRKIMER.

Witnesses:

FRANK A. KELLY,
JAS. A. HUSTON.