R. DUDLEY.

Improvement in Torsion-Springs for Vehicles.

No. 132,063. Patented Oct. 8, 1872.

Fig. 1.

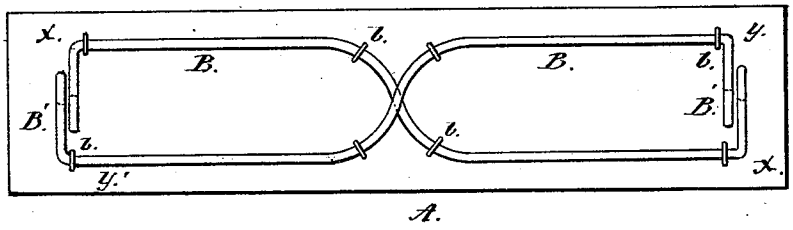


Fig. 2

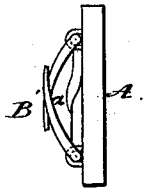


Fig. 3.

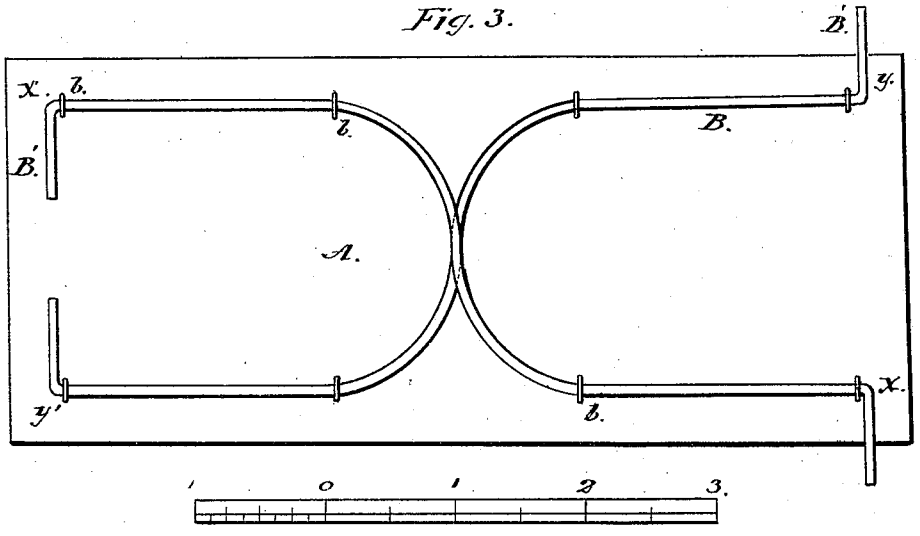
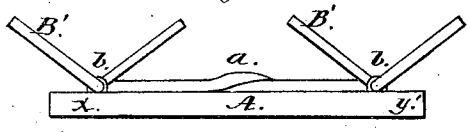


Fig. 4.



Witnesses.
Edwin James.
K. V. Gordon,

Inventor.
Richard Dudley.
per J. E. P. Holmead
Attorney

AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

RICHARD DUDLEY, OF ERIE, PENNSYLVANIA.

IMPROVEMENT IN TORSION-SPRINGS FOR VEHICLES.

Specification forming part of Letters Patent No. **132,063**, dated October 8, 1872.

To all whom it may concern:

Be it known that I, RICHARD DUDLEY, of the town and county of Erie, and State of Pennsylvania, have invented certain new and useful Improvements in Torsion-Springs for Vehicles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing and the letters of reference marked thereon, making part of this specification, in which—

Figure 1 is a plan view of my improvement, as applied to the bolster-plate of a wagon; Fig. 2 is an end view of Fig. 1; Fig. 3 is a plan view of my improvement, as applied to carriages, &c.; and Fig. 4 is an end view of Fig. 3.

The object of my present invention is to furnish for all classes of vehicles a torsion-spring in which the steel rods which compose the same are so formed and arranged as to secure the greatest degree of torsional action that is possibly attainable. It is well known to all who are familiar with this class of springs that its tension or degree of eleasticity measurably depends on the length of the rod, through the twisting or wrenching of which the torsional action of the spring is exerted. Therefore, the arrangement of spring which secures the greatest degree of length to its component rods furnishes a spring whose torsional action is not only the most perfect, but the one in which the same is the most readily and effectively exerted. In my present improvement these advantages are attained and are secured simply by bending the rods so as to secure in each such a compound or reverse curve as the ogee or S-shape form possesses. These rods are so arranged that the lateral lever-arms of each shall rest on the corners of the bolster or other bed-plate, which are diagonally opposite.

The construction and operation of my invention are as follows: A in Figs. 1 and 2 is the bolster-plate of a wagon, and in Figs. 3 and 4, the bed-piece or other equivalent support in a carriage. B B are the two rods which compose the spring. These rods are of steel, suitably tempered to permit of the necessary twisting or wrenching to secure the proper torsional action of the spring. These rods are formed with lateral lever or turned-in arms B′ B′, and project from the main shank of the spring at a direct right angle running at a positive inclination therefrom, as clearly shown in Figs. 2 and 4. Each of these rods B B is bent in the form of a double curve, as clearly shown in Figs. 1 and 3. The ogee or more positive S-shaped form is most admirably adapted for the purpose designed. These are arranged on the bolster-plate or other support in such manner that they cross one another at the center of the bolster-plate, and may be twisted at this section, as shown at *a*, Fig. 4, which secures, as it were, a sort of interlocking of the rods at this point. These rods are rigidly secured to their bed-plate or support by means of staples *b b* and have their outer bearings at *x x′* and *y y′*, and which are the corners of the bolster or bed-plate, and are diagonally opposite. The lateral lever or turned-in arms B′ B′ may be in such relative position as to represent the crucial form, as in B. Hershey's patent of September 24, 1867; or, instead of being turned in, they may be turned out, as claimed by B. Hershey in his patent of 1871.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

A torsion-spring, composed of rods which cross each other diagonally when each rod is bent so as to have a double or reversed curved contour, in order to secure an increased length, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD DUDLEY.

Witnesses:

JOS. T. K. PLANT,

EDWIN JAMES.