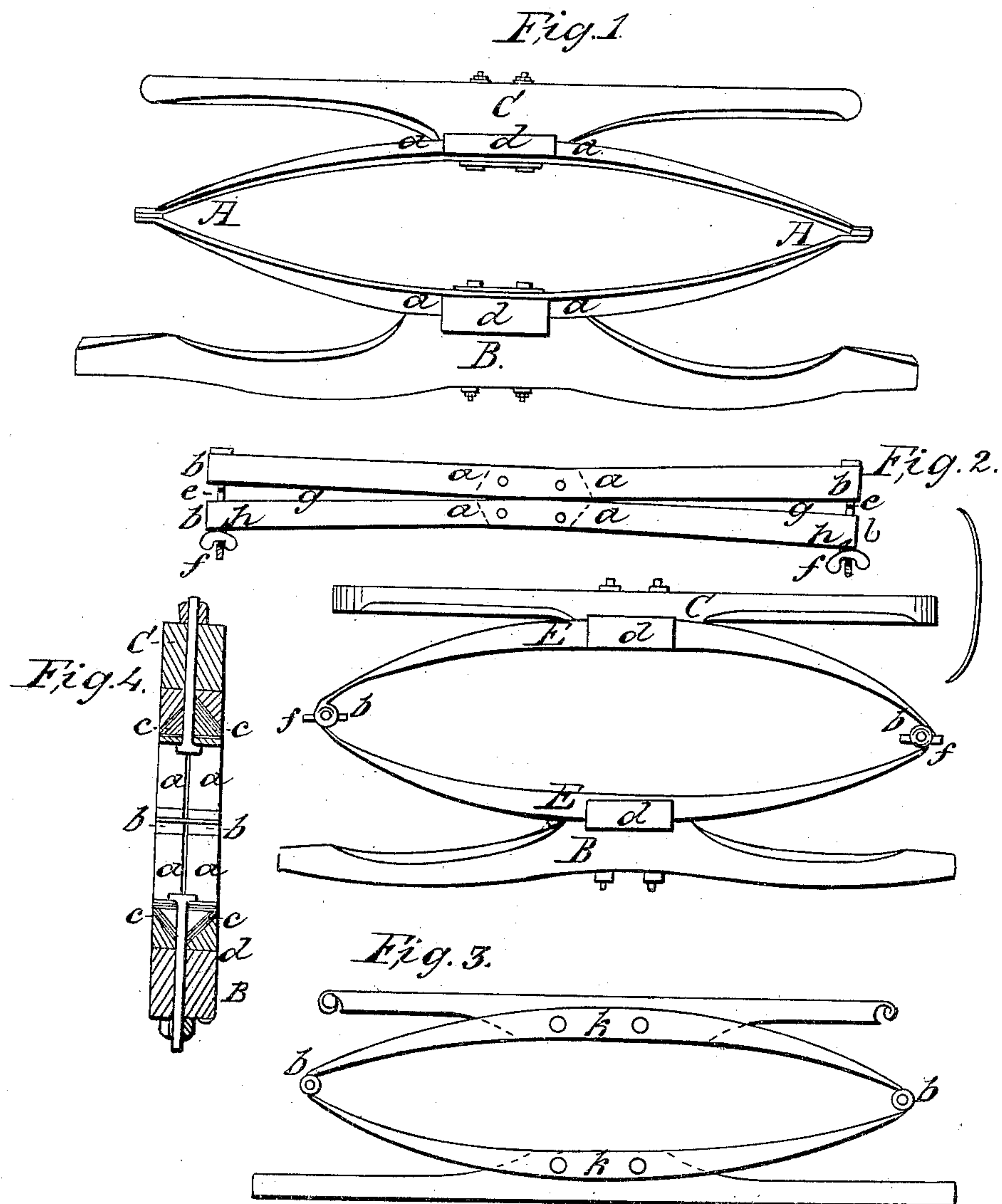


E. J. POST.
Vehicle Spring.

No. 69,125.

Patented Sept. 24, 1867.



Witnesses:
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United States Patent Office.

EUGENE J. POST, OF VIENNA, NEW JERSEY.

Letters Patent No. 69,125, dated September 24, 1867.

IMPROVEMENT IN SPRINGS FOR VEHICLES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, EUGENE J. POST, of the village of Vienna, in the county of Warren, in the State of New Jersey, have invented a new and useful Improvement in Springs for Vehicles, which I call a Duplex Twist Elliptic Spring; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a side longitudinal view of a duplex contra-twist elliptic spring.

Figure 2 shows a plan or top view with hinge-jointed ends; also a side elevation.

Figure 3 shows a side view of a single contra-twist elliptic spring for light vehicles.

Figure 4 shows a cross-section through the centre of fig. 1.

The object of my invention is to lessen the cost of elliptic steel springs for vehicles from fifty to seventy-five per cent., and reduce the weight of the same from one-half to two-thirds, and yet retain all of the required strength and necessary elasticity for easy-riding carriages, which are more durable, and operate with no noise, and less friction than any other mode of construction of elliptic springs known or used.

My invention consists in the form and construction of elliptic springs, whereby several folds of leaves are dispensed with, and a pair of single leaves of spring steel placed side by side, and so secured together at the ends, and in the centre, where they are bolted to the axle-tree and bolster or rocker, that all of the necessary strength and elasticity required is obtained, while the weight of the spring is diminished from one-half to two-thirds. My invention further consists in the application of metal centre-blocks in which the springs are fitted and secured to the wood-work of vehicles, and also in the manner of securing the ends of the leaves or the plates of spring steel, so that the springs may be adjusted so as to bear more or less weight, or may be more or less elastic, according to the nature of the load that is carried on them.

That others may be enabled to make and use my improved contra-twist elliptic spring, I will describe it more in detail, referring to the several figures shown in the drawings, and to the letters of reference marked thereon. The same letters indicate the like parts in all of the several figures.

My duplex contra-twist elliptic spring A A is made of four pieces of single-plate spring steel *a a a a*, the ends being secured together by bolts forming hinge-joints *b b* much in the usual manner; the central portion of the plates *a a* being twisted to an angle of from thirty degrees to forty-five degrees both right and left, so as to form pairs, which, when placed side by side, and secured together by the angular blocks *d d*, form an arch, as seen at *c c* in fig. 4. The metal blocks *d d* being fitted to the arch of the leaves or spring plates *a a a a*, and also being notched into the wood of the axle-tree B and bolster *c* through which the springs are bolted, secure the springs in the most thorough and substantial manner. In order to make elliptic steel springs so that they may be adjusted to a greater degree of stiffness, or to give them more or less ease of motion and elasticity, I put the hinge-joints *b b* together with long bolts *e e* and thumb-nuts *f f*, with a spring or slightly yielding substance *h h*, so that by narrowing up the opening between the edges of the ends of the plates *a a*, the spring may be made quite rigid, and when the thumb-nuts *f f* are turned out so as to let the slit *g*, between the plates *a a a a*, open to its fullest capacity, the spring will be quite elastic and easy of motion; the adjustability of the spring being more particularly illustrated in the plan or upper figure of fig. 2. For many kinds of lighter vehicles the spring may be constructed of a pair of single plates, E E, the central portion being swaged up so as to form an arch, and may be secured to the wood-work of the vehicle by using metal blocks, *d d*, in the manner above described. This mode of constructing springs is more particularly shown in the lower drawing of fig. 2. For very light vehicles the spring may be constructed of single plates of spring steel, *k k*, twisted in the centre, to an angle of forty-five degrees one way, and bolted on to a bevel corner of the axle-tree and bolster, as seen in fig. 3.

It has been practically demonstrated that my improved duplex contra-twist elliptic steel spring, constructed and secured to the axle-tree and bolster as above described, possesses many and great advantages over elliptic springs having two, three, or more leaves lapping over one another. In the first place, full one-half of the labor is saved in the making, and from fifty to seventy-five per cent. in the weight and cost of material, more durable, less liable to break, as there are no weak places, less friction, more elasticity, is easily adjusted to the capacity of the load to be carried, and will sustain a greater weight than lapped-leaf springs of more than three times the same weight.

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

1. Constructing elliptic steel springs by twisting the leaves or blades right and left, so that the centre portion is at an angle with the plane of the ends, thereby obtaining greater strength and elasticity, substantially as herein described.

2. I claim the metal seat or spring-blocks *d d*, constructed as and for the purposes specified.

3. I claim so securing the ends of duplex contra-twist springs together as to prevent them from spreading apart under the pressure of a load, as herein described.

4. I claim connecting the joints at the ends of double springs, so that they may be adjusted to bear more or less weight, and also may be made to be more or less elastic, by apparatus constructed and operating substantially in the manner herein described.

EUGENE J. POST.

Witnesses:

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