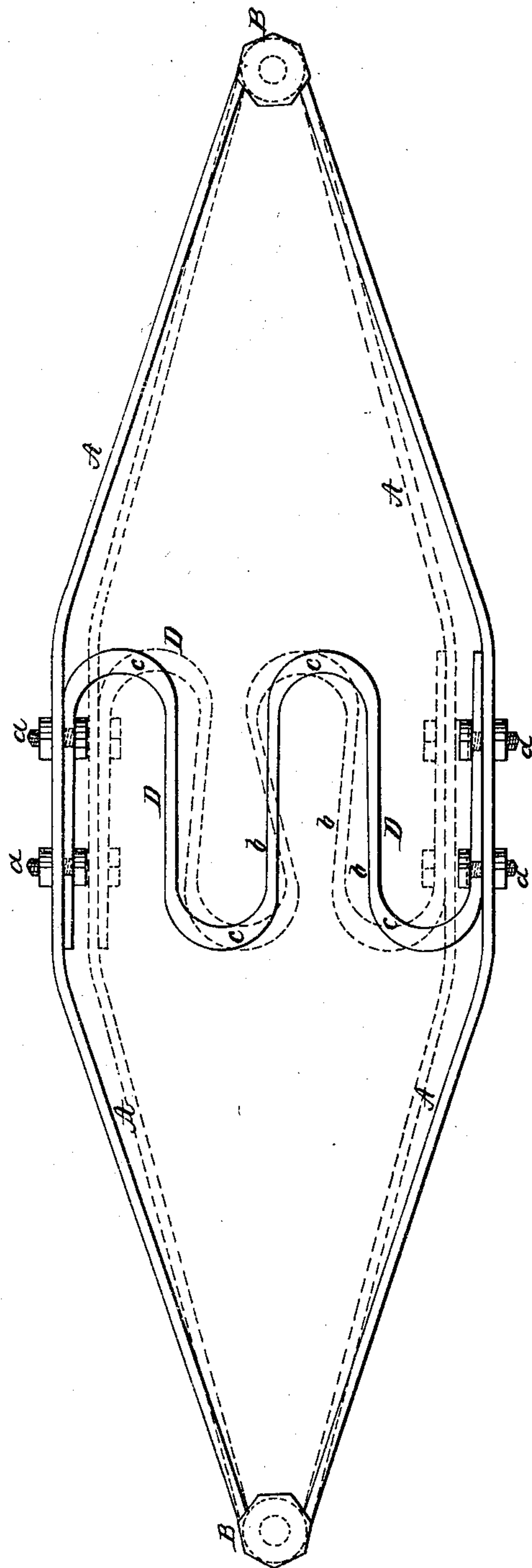


R. Montgomery.
Carriage Spring.

N^o 14,197.

Patented Feb. 5, 1856.



UNITED STATES PATENT OFFICE.

RICHD. MONTGOMERY, OF NEW YORK, N. Y.

CARRIAGE-SPRING.

Specification of Letters Patent No. 14,197, dated February 5, 1856.

To all whom it may concern:

Be it known that I, RICHARD MONTGOMERY, of the city, county, and State of New York, have invented a new and useful Improvement in Springs for Carriages, Cars, Wagons, &c.; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, which makes part of this specification and which represents a side elevation of a spring embracing my improvement, the black lines representing the spring in its natural position, and the red lines showing its position when under pressure.

The object of my invention is to supersede the use of the extra spring leaves commonly used on the exterior of the ordinary elliptical spring, thereby causing a great saving in labor and in the expenditure of material used in manufacturing them.

Elliptical springs as heretofore constructed and in general use have had their power of resistance placed at right angles to the plane of pressure, which rendered them exceedingly liable to be broken by a sudden or heavy jolt of the carriage; to remedy this defect, others have inserted springs of various forms between the inner leaves of the elliptical spring about or at their center so as to cause it to bear directly in the plane of its liability to break, but while they removed this difficulty, it was found that when they made their intermediate springs (which were of spiral and zigzag form) of a strength sufficient to resist or support the pressure, that they had materially lessened its elasticity—the essential property of a good spring; hence this particular class has never come into successful and general use.

The elasticity of springs, all things being equal are in proportion to their thickness; hence a spring of zigzag form when made of sufficient thickness to support the weight of a light carriage may have elasticity enough for that purpose, but when thickened in order to support a greater weight will lose elasticity in proportion to its increased diameter.

In corrugated springs I found that their tendency to break was much greater at the

angles or arches of their folds than at the sides; from this I conceived my present invention by which I am enabled to overcome these difficulties and at the same time preserve the requisite elasticity to the spring and give to it the necessary strength to resist the pressure of the curved leaves of the elliptic spring when suddenly collapsed or compressed by any heavy weight or force, without being broken, thus accomplishing a most useful object which has long been tried in vain.

My improvement consists in substituting for the extra leaves of the ordinary elliptic spring, an internal corrugated spring of peculiar construction, having its angles or arches of a greater thickness than its sides, the thickened angles giving the necessary strength, and the thin sides the requisite elasticity.

A, A, represents respectively the inner, upper and lower leaves of a common elliptic spring, joined together at the vertices of their transverse axes by a hinge or knuckle joint (B). Between these plates A, and at the vertices of their conjugate axis, is secured by means of screw bolts *a, a*, a corrugated steel spring (D), properly annealed so as to yield the greatest degree of strength and elasticity with the least possible degree of brittleness. The spring D, has its angles or arches (*a*) of a greater thickness than its sides (*b*) for the purpose before described. The sides *b*, of the spring D, when not under pressure are parallel to each other as shown in the drawing by black lines, but when pressure is applied they will assume the position shown in red lines, instantly recovering their former position on the removal of the compressing force.

What I claim as my invention and desire to secure by Letters Patent is—

The corrugated spring D when used in connection with the elliptic spring A substantially as described.

In testimony whereof I have hereunto subscribed my name.

R. MONTGOMERY.

Witnesses:

P. HANNAY,
JNO. JOHNSON.