

(No Model.)

P. J. KERN.
VEHICLE SPRING.

No. 304,206.

Patented Aug. 26, 1884.

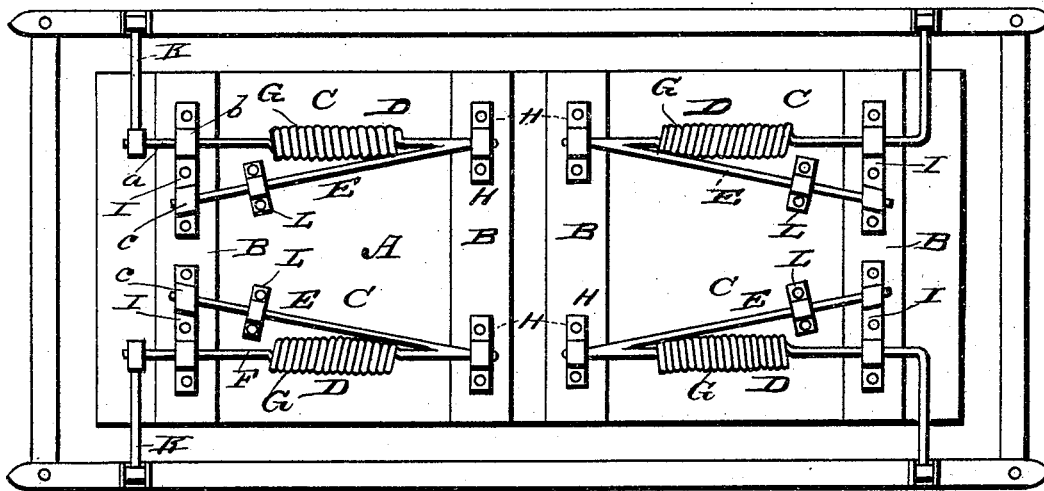


Fig. 1.

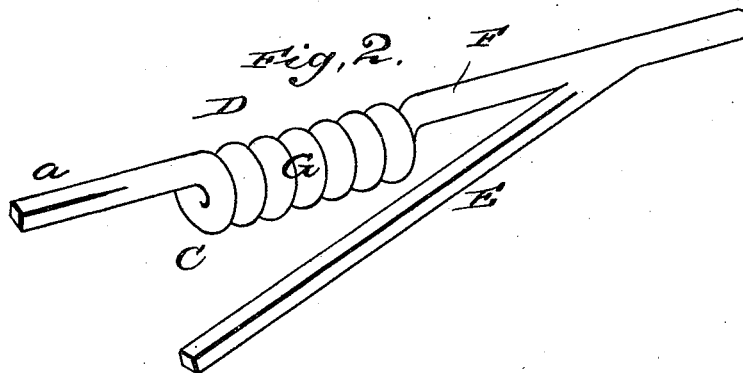


Fig. 2.

WITNESSES
E. H. Boake
Plumasi

INVENTOR
Pham J. Kern,
by Anderson Smith
his ATTORNEYS

UNITED STATES PATENT OFFICE.

PHAON J. KERN, OF FRANKFORT, INDIANA.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 304,206, dated August 26, 1884.

Application filed May 3, 1884. (No model.)

To all whom it may concern:

Be it known that I, PHAON J. KERN, a citizen of the United States, residing at Frankfort, in the county of Clinton and State of Indiana, have invented certain new and useful Improvements in Vehicle-Springs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a bottom view of a vehicle-body, showing my improvement; and Fig. 2 is a perspective view of one of the springs detached therefrom.

This invention has relation to vehicle-springs; and it consists in the construction and novel arrangement, in connection with torsion-springs, of reversed torsion-arms connected rigidly to the inner portions of said torsion-springs, the outer ends of said torsion-arms being provided with socket-plates or other common fastenings to the body, whereby they are adapted to be secured rigidly to the body of the vehicle; and the invention also consists in combining with the reversed torsion-arm an axially working spiral spring having journal-bearings at each end; and the invention consists in providing, in combination with torsion-springs, an adjustable regulator-plate, all as hereinafter set forth.

In the accompanying drawings, the letter A designates the bottom surface of the body of the vehicle, to which transverse cleats B may be fastened to strengthen the body at the points where the bearing-plates of the springs are applied. Each spring C consists of a direct portion, D, and a reversed torsion-arm, E. The direct portion D of the spring operates by torsion, and may be either a straight bar, as at F, or it may be made in spiral form, as at G, having straight ends. The ends *a* of the main or direct portions D of the springs are seated in journal-bearings *b* of plates H and I, which are secured to the cleats or body of the vehicle. The reversed torsion-arm E is either rigidly secured to the inner portion of the direct spring portion D, or is made entire therewith. In either case it is rigidly joined to

said direct portion, so that when said direct portions are affected the torsion-arms aid in sustaining the strain and in producing a reactionary elastic movement. Each outer plate or plate I is provided with a square or socket bearing, *c*, in which the outer end of the reversed torsion-arm is rigidly fastened so that it cannot turn. In this construction it is designed to provide a considerable length of spring within a short space, and to this end it may be sometimes preferred to make the direct spring portion in spiral form, as hereinbefore referred to. These springs may be employed for side-bar vehicles, or for those in which semi-elliptic springs are used in front and rear. In the latter case the springs are arranged transversely, the torsion-arms E being fixed to the outer plate, I, and extending inward toward the middle line of the body, and the direct portions D of the springs extending outward and beyond the body, and being connected by arms K to shackles of the semi-elliptic springs. These arms may form portions of the direct springs D, or may be provided with square sockets for rigid attachment thereto, the outer ends of the portions D being squared to fit said sockets. In the application of these springs to side-bar vehicles, they are fastened to the body in such a manner as to extend in the direction of the length thereof, as indicated in the drawings, these arms K being connected to shackles of the side bars.

L represents an adjustable plate, having an aperture through which the torsion-arm E of a spring is passed. This side plate is adapted to be adjusted nearer to or farther from the fixed end of the torsion-arm, and after adjustment can be fastened in position by means of screws. When the plate or regulator-slide is moved nearer to the fixed end of the torsion-arm, the spring is rendered more delicate and will work better under a light weight. When, however, this regulator-plate is adjusted farther from the fixed end of the torsion-spring, it is designed to stiffen the spring, so that it will be better adapted to work under a comparatively heavy load.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. In a vehicle-spring, the combination,

with the direct torsion-spring D, having the intermediate spiral portion, of a reverse torsion-arm, E, rigidly secured to the inner portion of said torsion-spring, as shown, and provided at its outer end with a socket-plate fastening, whereby it is rigidly secured to said outer end of the vehicle, substantially as specified.

2. In a vehicle-spring, the combination, with the reversed torsion-arm having a rigid fastening at its outer end, of an axially working spiral spring, working in journal-bearings,

and rigidly connected to said torsion-arm at or near its inner end, the respective arms meeting in an angular reduced terminal bearing portion, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

PHAON J. KERN.

Witnesses:

WILLIAM R. MOON,
JAMES A. BIEBER.