

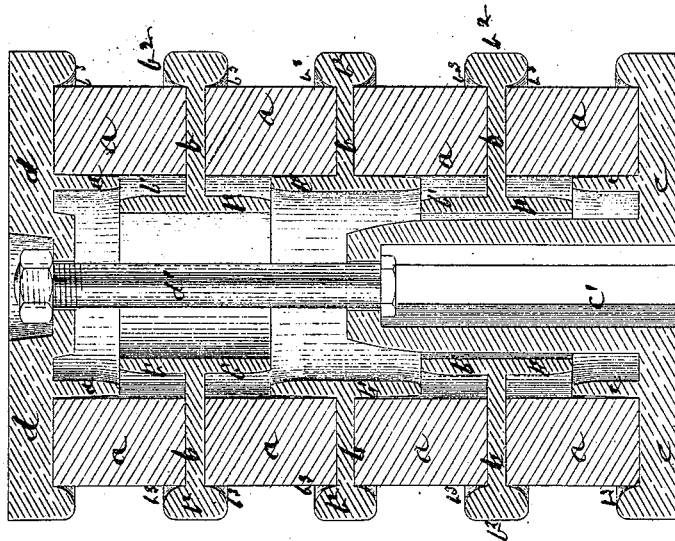
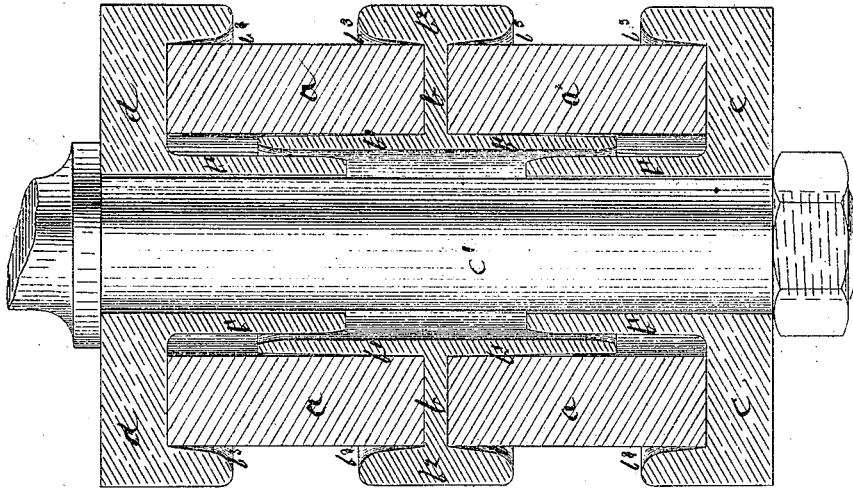
P. G. GARDINER.

Car Spring.

No. 107,034.

Patented Sept. 6, 1870.

Fig. 2.



WITNESSES:

J. B. Staples  
C. Ch. Wagner

Fig. 1.

INVENTOR

P. G. Gardiner

# UNITED STATES PATENT OFFICE.

PERRY G. GARDINER, OF NEW YORK, N. Y.

## IMPROVEMENT IN CAR-SPRINGS.

Specification forming part of Letters Patent No. 107,034, dated September 6, 1870.

### *To all whom it may concern:*

Be it known that I, PERRY G. GARDINER, of the city and county and State of New York, have invented new and useful Improvements in the Construction of Railroad-Car Springs; and I do hereby declare that the following is a full and exact description thereof, reference being had to the drawings accompanying and making part of this specification.

My improvements have reference to that class of railroad-car springs which are constructed of a series of alternating india-rubber rings, with interposing and inclosing or supporting iron plates or disks; and my invention consists in the peculiar construction and form of the iron plates and the manner in which they are arranged, so as to sustain and operate with the india-rubber rings.

Figure I of the drawings represents a vertical cross-section through the central axis of one form of my improved springs, which I now proceed to describe.

In this spring, as here shown, there are four alternating rings of india-rubber, *a a a a*, all of the same form and size, arranged vertically with the same central axis.

Interposed between the india-rubber rings are the thin iron plates or disks *b b b*. These are constructed with circular openings at their centers, and are flanged around the openings, so that they form tubular sections which extend half-way across the inner faces of the two contiguous rubber rings, as seen at *b' b' b'*. They are made of alternating greater and less diameter in the tubular openings, so that the flanged ring or tubular section of any one of the disks *b'* will, when the spring is compressed, slide within or over, as the case may be, the contiguous part of the disk next to it, as shown in the drawings, their edges never coinciding, but sliding past each other. The upper and lower surfaces of these iron disks are all flat and parallel when the rubber rings are interposed between them, and the exterior rims of the iron disks are flanged above and below, as shown at *b<sup>2</sup>*, the inner face of each flange being rounded or beveled, as at *b<sup>3</sup>*, so as to give the rubber rings room to bulge, and at the same time to partially embrace and afford a support to it and hold it in place. The two end pieces or heads, *c d*, of the spring are constructed with similar flanges at the central openings, which form rings entering the ends of the

spring, and these, as shown on the spring represented in Fig. I; shut over the flanges or rings *b'* of the contiguous plates, and they interlock when the spring is under pressure. The base *C* is provided with a hollow socket, *C'*, affixed to it, extending upward about half the height of the spring, into which a bolt, *d'*, is passed, having a head at its lower end and a screw-thread on the upper, which, passing through the cap *d*, and being provided with a suitable nut, holds together and sets the spring for use. This construction and arrangement of the rings or flanges of the plates and of the heads of the springs, as described, hold the spring in a vertical position when in use by the support given to the rubber rings and by the interlocking of the rings, and prevent the sagging to one side, or "squatting," as it is termed in the language of railroad-operatives.

A modified form of my invention is shown in Fig. II of the drawings, in which similar letters represent similar parts. In this form of the spring the india-rubber rings are made much thicker, and in this instance only two such rings are used, which form, with the middle iron disk and the cap and base, a spring of sufficient height. The inner tubular flanges of the cap and base slide past the flange-ring of the middle iron disk upon a principle of construction the same as described in Fig. I. In this case the connecting-bolt is in one piece, with a head at one end and a screw-thread and nut at the other end, by which the parts are screwed together and the spring set for use. This form of the spring is adapted for use as a buffer-spring, the interlocking flanges of the plates forming great bearings and support to the spring, and prevent it sagging out of line.

It will be readily seen that the advantages of this mode of construction of this spring over and above those of springs heretofore constructed of rubber rings and alternating iron plates are that the springs are held in a true vertical position, and operate in such vertical position by reason of the support imparted by the wide flanged tubular sections and their interlocking each other, and giving the interior faces of the rubber rings support without cramping them, and the exterior rims or rounded flanges toward the exterior faces of the rubber rings support and hold the rings externally, and at the same time give them room to expand or bulge under pressure.

Having thus described my improvements and manner of constructing the same, what I claim therein as my invention, and for which I desire Letters Patent, is—

The peculiar form and construction of the intermediate iron plates and headings of the springs, made and operating as hereinbefore

particularly described, in combination with the rubber rings alternating with the iron disks, substantially as described.

P. G. GARDINER.

Witnesses:

J. B. STAPLES,

S. A. STODDER.