

D. G. DANIELS.
Car-Springs.

No. 137,295.

Patented April 1, 1873.

Fig. 1

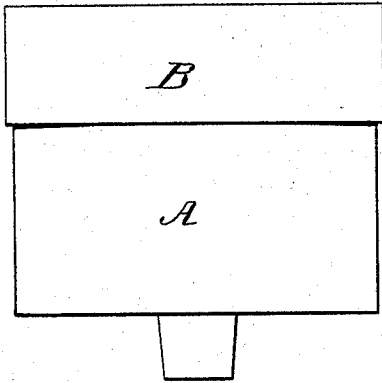


Fig. 2

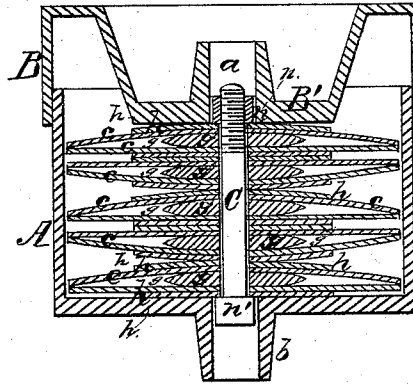


Fig. 3

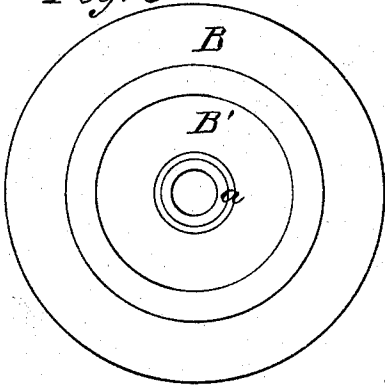


Fig. 4

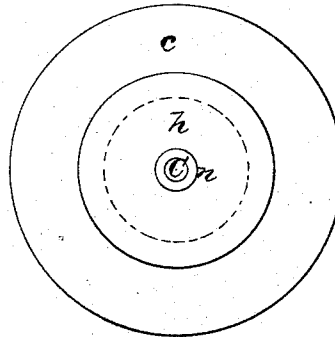


Fig. 5

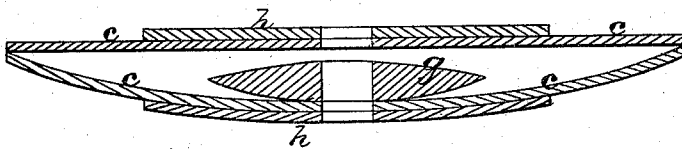


Fig. 6



Witnesses.

J. N. Campbell
W. H. Campbell

Inventor.

Daniel G. Daniels
by
Marion Fenwick & Son

UNITED STATES PATENT OFFICE.

DAVID G. DANIELS, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN CAR-SPRINGS.

Specification forming part of Letters Patent No. **137,295**, dated April 1, 1873; application filed February 5, 1873.

To all whom it may concern:

Be it known that I, DAVID G. DANIELS, of Pittsburg, State of Pennsylvania, late of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Spring for Railroad Cars and other purposes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is an elevation of the spring-box containing the pile of spring-plates. Fig. 2 is a diametrical section through the spring-box and spring-pile. Fig. 3 is a top view of the spring-box. Fig. 4 is a plan of the spring-pile. Fig. 5 is an enlarged diametrical section through a pair of spring-plates and the auxiliary spring-plates and the interposed elastic substance. Fig. 6 is an edge view of a pair of spring-plates and their auxiliary springs.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain improvements on springs, wherein spring-plates of the form of segments of a cylinder are put together in pairs so that their edges touch and leave a concavity between them, as set forth in the schedule annexed to my Letters Patent, dated on the 11th day of January, 1870.

The nature of my invention consists, first, in the combination of equalizing spring-plates with the main plates, the former being arranged between the pairs of the latter, and made of the same shape, but smaller in diameter, so that when the springs are confined together in a pile and pressure applied thereto the interposed equalizing-plates will strengthen the main plates centrally, and also distribute equally the strain throughout their entire area, thereby preventing the main plates from being crushed or otherwise injured when subjected to great weight and shocks, as will be hereinafter shown; second, in the nesting or piling together of the pairs of springs and their equalizing-plates in such manner that a pressure or strain upon one pair will be equally distributed throughout the entire nest, and in such manner that the nests are complete in themselves and ready to be incased by the purchasers, as will be

hereinafter explained; third, in constructing the case or box which receives the nest of springs with an overlapping cap, the central portion of which is depressed so as to bear upon the contained nest and operate as a follower, while the rim or flange of the cap overlaps the main portion of the box and excludes water, dust, and other substances, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawing, A represents a cylindrical box, which is adapted to receive within it a nest of circular spring-plates, and to prevent lateral displacement of the nest; and B represents the cap of this box, which has a central depression, B', that constitutes a follower for the nest of springs, and which is surrounded by a flange, rim, or skirting that fits loosely over the upper end of the box A, and keeps out water, dust, &c. By thus constructing the cap B it is made to serve not only as a cover to the box A, but also as a follower to the nest of springs contained therein, as shown in Fig. 2. The cap B is also constructed with a tubular extension, *a*, rising from the center of its depressed portion, for receiving and guiding the upper end of the bolt C and its nut *n*; and a similar tubular extension, *b*, is formed on the bottom of the box A in the center thereof, which extends below said bottom and receives the head *n'* which is on bolt C. These two tubular extensions not only serve as guides for keeping the bolt C in proper place, but they also prevent either the head or the nut on this bolt from hanging on the side of the holes and arresting the springs in a compressed condition. The springs *c c* are circular plates, curved as shown, and put together in pairs, with the concave sides of the two springs of each pair opposite each other, and the circumferential edges touching. I thus have a chamber between the two plates, into which I introduce either rubber, gutta-percha, felt, coarse-woven cotton, cork, or other known yielding material, which will more or less regain its original form when relieved from pressure after compression. The object of employing such a substance, *g*, is mainly to prevent granulation of the metal plates when

they are subjected to such a weight as would flatten them out were not such substance between them. Between the pairs of springs I interpose spring-plates *h h*, which are of the same form as the main springs *c c*, but of less diameter. These interposed plates *h* lie against the convex sides of the main springs and in the center thereof, and are held in place by means of the bolt *C* and its nut *n*, which confine together the nest. The object of spring-plates *h* is to make the main springs as strong about their centers, where the greatest strain is received, as they are at their circumference; or, in other words, to equalize the strain and distribute it throughout every part of all the plates *c* constituting the nest.

It will be seen by reference to Fig. 2 that the main springs *c* and auxiliary or equalizing springs *h* and the interposed substances *g* are all confined together in a nest by means of a single bolt, *C*, and a nut, *n*. Thus the nests are prepared by the manufacturer and sold in the market either with or without their inclosing-boxes.

The nests are detachable from their boxes by simply removing the covers thereof, and require no alteration or manipulation to apply them into their boxes.

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

1. The equalizing spring-plates *h*, applied between the pairs of main spring-plates *c*, all constructed of the form of segments of a cylinder, substantially as described.

2. The springs *c* and *h* and inclosed substance *g*, piled together in a nest and connected by a bolt *C*, and nut *n*, substantially as described.

3. The overlapping cap *B*, constructed with a centrally-depressed portion, *B'*, and combined with the box *A*, substantially as and for the purpose described.

DAVID G. DANIELS.

Witnesses:

J. M. BARNUM,
THOS. P. FETTER.