

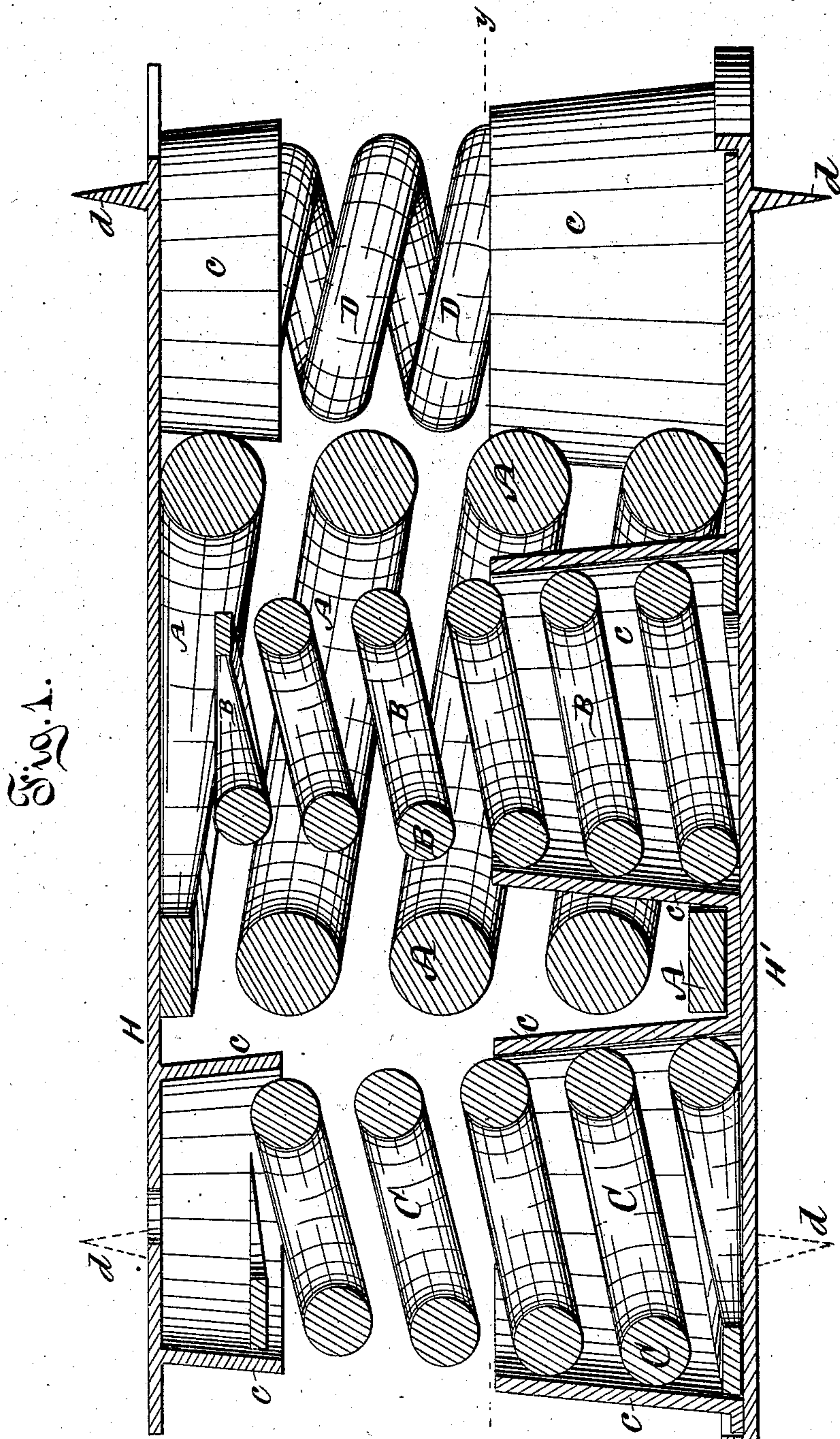
(No Model.)

2 Sheets—Sheet 1.

R. VOSE.
CAR SPRING.

No. 292,775.

Patented Jan. 29, 1884.



WITNESSES:

Geo. C. N. Gilbert
James Duncan

INVENTOR

Richard Vose
BY

ATTORNEY

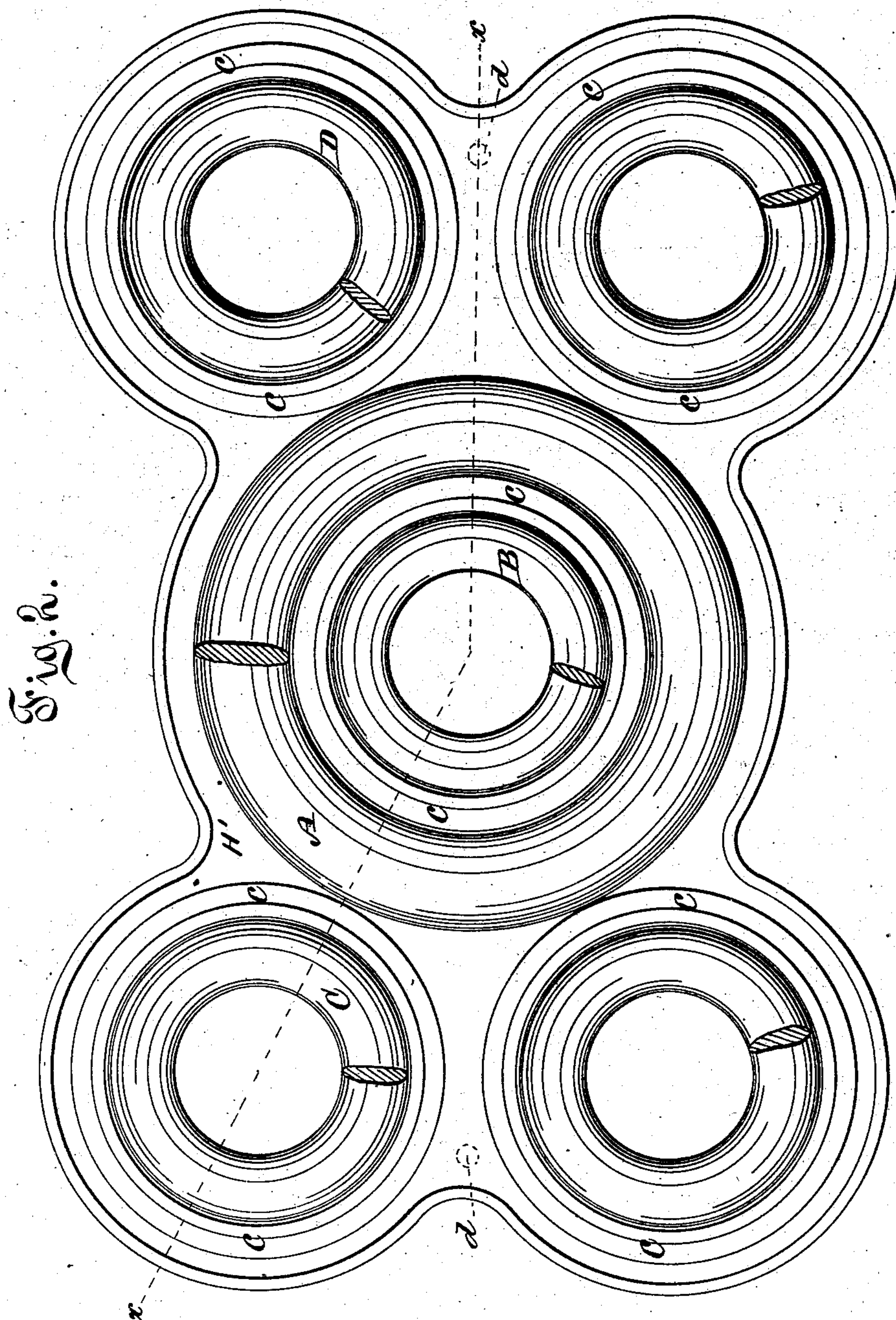
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WITNESSES:

Jno. C. St. Gilbert
James Quinlan

INVENTOR

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BY

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UNITED STATES PATENT OFFICE.

RICHARD VOSE, OF NEW YORK, N. Y.

CAR-SPRING.

SPECIFICATION forming part of Letters Patent No. 292,775, dated January 29, 1884.

Application filed October 22, 1883. (No model.)

To all whom it may concern:

Be it known that I, RICHARD VOSE, of the city of New York, county and State of New York, am the inventor of an Improved Car-Spring, consisting of a combination of springs novelly arranged, of which the following is a specification, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to the novel arrangement of spiral springs so arranged that the individual heaviest bearing-spring first receives the load or weight, and then the surrounding grouped springs are brought into action, when all are operated together and form a graduated spring capable of carrying a light load or an empty car without rattling and of sustaining a heavy load without an entire exhaust of bearing-power, as hereinafter described.

In the drawings, Figure 1 is a sectional view of Fig. 2 on line *x x*, showing my improvement, in one view P showing the case on the outer coil, and P' showing the casing removed half-way round the outer auxiliary coil, and showing, also, the sectional view of the coil-spring, as hereinafter stated. Fig. 2 is a sectional view of Fig. 1 on line *y y*, and is a plan view, the plate usually used above said springs being removed.

A is the heavy spiral spring, whose bearing capacity is greater than any other one of the group.

B is the inner conical-shaped spiral, and the two combined form a spring like the one shown in and covered by Letters Patent of the United States granted to me, No. 214,328, dated April 15, 1879.

C is the spiral cone, as well as D, whose bearing capacity, individually or singly, is not equal to that of A, but when combined together, or combined in groups in four surrounding the spring A, are, combined, of greater bearing capacity than A.

In the drawings, A is the longer as well as the heavier spring. It extends so that when at rest it is held in an upright position, and prevented from rattling by means of carrying-plates H H'. In these bearing or carrying plates are cast the lugs or studs *d d d d*, which are so constructed as to enter into the bolster underneath the car when the same are used.

c c c c are cups or shield-rims used around the individual cones, in order to prevent their lateral displacement when the weight is not resting on them, and these rims also prevent rattling, besides holding these conical springs in place, ready to act when the weight, increased, rests on them as well as on coil A.

D is the inner conical coil, put inside of coil A, and acts as an auxiliary aiding spring equally with C and D—that is, when the empty car is placed upon the truck-bolster and the same are placed on the bearing-plate H, the spring A is of sufficient bearing capacity to carry the light load without the assistance of the auxiliaries B, C, and D. The load increased, the spring A is decreased in longitude till the bearing-plate rests on the spiral C and D and B, and these all aid the heavier spring A to carry the load. Now, it will readily be seen that I obtain in a little space a spring formed of the combined coiled spirals that is adapted to carry an empty freight-car or a heavy loaded one, all with the same ease and without danger of fracture, as would be the result if in carrying an empty car the coils C and D were not brought into action, but allowed to wobble about till the load, increased, brings the plate H down onto them, when, if they are not in an upright position, they would receive the load on them laterally and cause a fracture.

In drawing No. 2, Sheet 2, I show how I would arrange a group of five springs, in which the center coil is the heavier coil; but the four coils 1, 2, 3, and 4, combined in resistance, would be greater than the center coil, 5. It will also be as readily seen that I can so arrange coils 1 and 3 that they may be of greater longitude than coils 4 and 2; that coils 4 and 2 are shorter than coil 5, and coil 6 greater than coils 4 and 2 and less than coil 5. The action, then, would be: an empty car would rest on coil 5, while the rims would hold coils 6, 4, 3, 2, and 1 in position. The load increased, the coils 5 and 6 would bear all; further increased, the coils 5, 6, 4, and 2; the load further increased would rest on all coils; and so, in a small space, a several stepped graduated spring is obtained whose combined bearing capacity is of great power.

I am well aware that there is a combined spring heretofore made in which the lighter

springs are of greater longitude, and thus receive the load first. They depressed, the load is then brought to bear upon the stronger spring. The greater spring is in such cases
5 always the last one acted upon, and, till it is acted on, is left to rattle and shift about, especially under empty cars; but by my invention I avoid this, and bring the heaviest
10 spring into active bearing first, so that it cannot rattle, and by the rims hold the lighter collateral springs into position, ready for action.

I show lugs *d d*, which are made sharp-pointed, so that they are driven into the bolster by the weight of the car without any provision made for their reception, as the car-body is placed upon the spring, thus saving the necessity of boring a hole, as heretofore has been necessary.

20 What I claim, and desire to secure by Letters Patent, is—

1. A spring for railroad-cars, composed of a spiral coil-bar having in its interior a conical-shaped spiral coil, in combination with two
25 or more conical spiral coils which act as col-

lateral springs, and which singly are weaker than said spiral coil A, all so arranged that the spiral coil having the greatest bearing capacity is first acted on, and then action is brought to bear upon the weaker spiral conical coils, substantially as described, and for the purpose specified. 30

2. A group of spiral coiled springs for railroad-cars, composed of two or more spiral coils conically shaped, of less bearing capacity than the center spiral coil, A, all graduated as described, whereby the heavier spiral coil first receives the weight, and the weight being increased, said spiral is assisted by the differently - graduated conically - shaped spirals, which singly have less bearing capacity than the spiral coil, substantially as described, and for the purpose specified. 40

Witness my hand this 20th day of October, 1883.

RICHARD VOSE.

Witnesses:

JOHN C. N. GUIBERT,
JAMES QUINLAN.