J. W. COCHRAN.

Car Spring.

No. 110,204. Patented Dec. 20, 1870.

Fig. 1

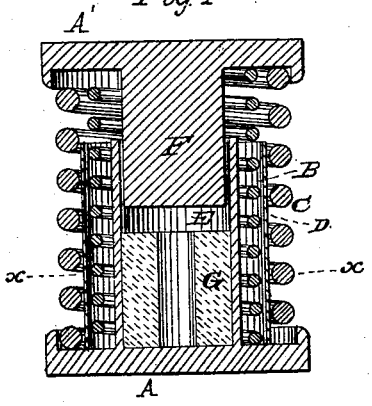


Fig. 2

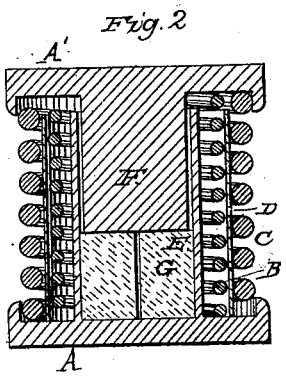
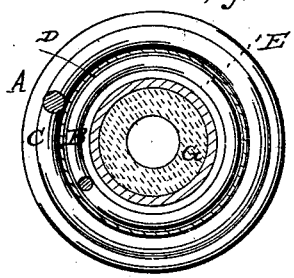


Fig. 3



Witnesses
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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN CAR AND OTHER SPRINGS.

Specification forming part of Letters Patent No. **110,204**, dated December 20, 1870.

To all whom it may concern:

Be it known that I, JOHN W. COCHRAN, of the city, county, and State of New York, have invented a new and useful Improvement in Car and other Springs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figures 1 and 2 represent longitudinal sections of my improved spring in its distended and compressed conditions, and Fig. 3 a transverse section taken as indicated by the line *x x* in Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention consists in a railroad-car or other spring, in which two detached heads or head and base have arranged in between them a nest of metallic spiral springs, the inner one of which is supported internally by a tubular column made to project from the one head or base, and each spring separated from the other by a longitudinally split or divided expansive tube or shield. The other head of the spring has a close or solid stem, which is made to enter within the tubular column of the opposite head or base, to act as a guide in the working of the entire spring, and which acts upon a spring arranged within said column, such inner spring being composed of a cylindrical tubular piece or pieces of india-rubber. A combination-spring thus constructed is quick, powerful, and durable, and the separate springs of which it is composed are supported against lateral twist or bend and from running into each other, although the separate spiral springs be coiled, if desired, in like directions.

Referring to the accompanying drawing, A represents the one head or base of a railroad-car spring, and A′ the opposite head thereof. These heads, which may be made of cast-iron, are recessed on their inside faces to receive within and between them a nest of spiral metal springs, B C, of which there may be any desired number. These separate springs must be composed of different thicknesses of wire, the outer spring or springs being the stoutest and making a less number of coils than the inner one or ones. They may all, however, be coiled in the same direction, and when two or more are used they are prevented from running the one into the other by the interposition between them of a longitudinally split or divided expansive loose tube or shield, D, that also serves to support the springs against lateral twist or bend; but this latter action is more prominently and effectually guarded against by the arrangement of the inner spiral spring around the tubular column E, which may be cast with or fast to the one head or base A, and which forms a firm central core or support for the several springs, likewise which constitutes a box or socket for a close or solid central stem or plunger, F, that projects from the opposite head, A′, to work within, and whereby the spring, as a whole, is guided and steadied in its action.

Said tubular column E is also used to hold within it a central spring, G, of rubber, in the shape of a hollow cylinder, against which, after compression of the spiral spring, the stem F is caused to bear, thus giving a firm and elastic action at the center, which relieves and assists the outer nest of springs. This central spring, G, being externally bound by the hollow column E, can only during its compression undergo a closing action, which gives it an immense sustaining force, that will protect the spiral springs against shutting or exhausting, while the latter quicken and give life to the rubber spring, which is shielded in a reliable and positive manner from the outside springs by the tubular column.

Either head A or A′ may be made the moving one in the spring, or both be made movable, and the spring reversed or arranged to occupy any suitable position.

What is here claimed, and desired to be secured by Letters Patent, is—

A car-spring consisting of two or more concentric spiral springs, one within the other, the central rubber spring, G, constructed to act also as an air-cushion, and the dividing-cylinders D and E, all arranged and operating substantially as shown and described.

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Witnesses:

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