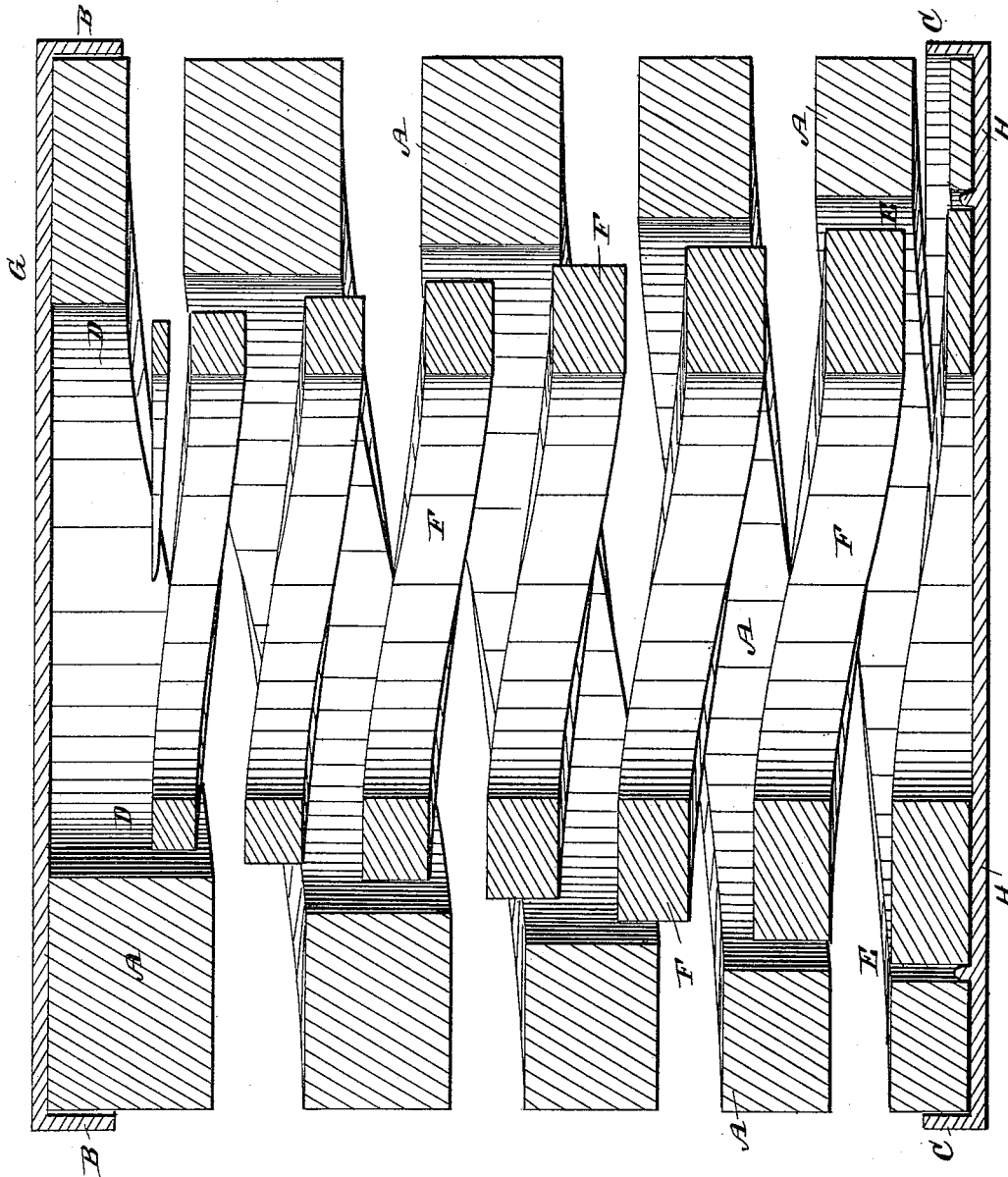


(No Model.)

R. VOSE.
CAR SPRING.

No. 348,251.

Patented Aug. 31, 1886.



WITNESSES:

John S. Silver
D. F. Clarke

INVENTOR

R. Vose

UNITED STATES PATENT OFFICE.

RICHARD VOSE, OF NEW YORK, N. Y.

CAR-SPRING.

SPECIFICATION forming part of Letters Patent No. 348,251, dated August 31, 1886.

Application filed November 8, 1883. Serial No. 111,162. (No model.)

To all whom it may concern:

Be it known that I, RICHARD VOSE, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Car-Springs, of which the following, taken in connection with the accompanying drawing, is a specification.

My invention relates to that class of car-springs which are made up from a spiral coil, or a number of such coils combined, and especially to that class in which such coil or coils is or are constructed from a bar or bars of a gradually-tapering form from end to end.

In Letters Patent No. 41,950, granted to me March 15, 1864, I have shown a number of springs of this character formed from a single spiral coil, some of which are wound in cylindrical and the others in conical form, the said coils being so graduated, by reason of the tapering form of the rods or bars out of which they are formed and the manner in which they are wound, that the resisting power thereof gradually increases from their upper ends, where it is the least, to their lower ends, where it is the greatest. The springs shown in this patent, while effective under certain conditions, are so constructed as to sustain given weights, and hence when loaded above or below certain limits they either fail to yield to the action thereof or else become so much compressed as to possess little or no elasticity. As a result of this, such springs are not adapted to the carrying of both light and heavy loads, and in consequence thereof they are not suited to cars which are run at times empty and at other times heavily loaded.

The object of my invention is to obviate this defect and to produce a spring which shall not only possess all the advantages due to the employment of spiral coils formed from tapering rods or bars, but which shall at the same time be exceedingly simple and compact in construction and effective in operation.

To this end my invention consists in the combination, with an exterior spiral coil formed from a bar or rod of gradually-decreasing cross-section from one end to the other, of an interior coil constructed from a similarly-shaped bar or rod, and preferably arranged within the former, so that the end of the latter, which possesses the least resisting power, shall

be opposite to the end of the other, which possesses the greatest resisting power, all as hereinafter described.

Referring to the drawing, wherein my invention is shown in sectional elevation, A is the exterior coil, which is preferably made by winding a bar of gradually-tapering form about a tapering mandrel, the degree of taper of the mandrel being such that the coil, when completed, shall be substantially cylindrical on its exterior surface from its upper end, B, to its lower end, C, and its interior tapering or conical from the point D to the point E.

F is the interior coil, which is arranged within the coil A, and is formed from a similarly-shaped bar or rod by winding it about a cylindrical mandrel, so that while it is cylindrical in its interior its exterior surface tapers from its lower to its upper end.

The coils A and B, as thus constructed, both rest upon the base-plate H, which is provided on its upper side with suitable flanges to hold them in their proper positions thereon, the end of coil A, possessing the greatest resisting power, being preferably arranged opposite to the end of coil B, possessing the least resisting power.

The coil A is made sufficiently strong, and is so graduated as to carry an empty car, or one lightly loaded, without the assistance of the coil F, which, being designed as an auxiliary to the coil A, and to supplement its action only when carrying a heavy load, is made somewhat shorter than the same. Surmounting the coil A is the usual cap or cover, G, upon which the weight of the car rests and is borne.

A spring constructed as above set forth, when placed in proper position under a car, will operate as follows: If the car be empty, or but slightly loaded, the entire weight will be carried by the spring A, which is so graduated as to support the same and afford the requisite yielding action to allow of the car riding with smoothness and ease. The weight of the load being increased, said spring will yield to its action until it is compressed to such an extent that the cap or cover G will rest upon the top of the coil F, when that coil will be brought into operation and aid or supplement the action of the coil A in sustaining said load.

By this construction of parts it will be seen

that I not only produce a spring which possesses all the advantages due to the employment of tapering bars in the manufacture of the constituent coils thereof, and which is extremely sensitive in its action, but which is also adapted to the carrying of both light and heavy loads, and is at the same time both compact and simple in construction.

I have shown my spring as resting upon the base plate H, and in such position I prefer to employ it; but it is to be understood that I do not restrict myself thereto, as it is obvious that I may invert the same and allow it to rest upon the cap or cover G, any of the usual devices being employed to sustain the coil F with its base against the base-plate H when not brought into action.

I am aware that it is not broadly new to arrange a plurality of spiral coils with one inclosed within and concentric to the other, as shown, for instance, in Letters Patent No. 119,254, granted to me September 26, 1871, and such I do not claim. I am not aware, however, that two spiral coils formed from bars which gradually taper from end to end have ever before been combined to produce a graduated spring which shall be adapted to the carrying of both light and heavy loads; and therefore

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

1. The combination, with an exterior spiral coil formed from a bar or rod of gradually-decreasing cross-section from end to end, of an interior coil constructed from a similarly-shaped bar or rod arranged within the former, substantially as described.

2. The combination, with an exterior spiral coil formed from a bar or rod of gradually-decreasing cross-section from end to end, and an interior coil constructed from a similarly-shaped bar or rod arranged within the same, of a base or support upon which both of said coils rest, substantially as described.

3. The combination, with an exterior spiral coil formed from a bar or rod of gradually-decreasing cross-section from end to end, of an interior coil constructed from a similarly-shaped bar or rod and arranged within the former, with the end possessing the least resisting power opposite to the end of the exterior coil possessing the greatest resisting power, substantially as described.

RICHARD VOSE.

Witnesses:

JOHN S. SILVER,
D. P. CLARK.