

J. W. CULMER.
Car-Springs.

No. 134,646.

Patented Jan. 7, 1873.

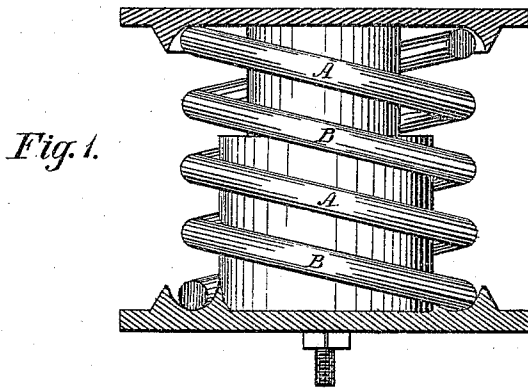


Fig. 2.

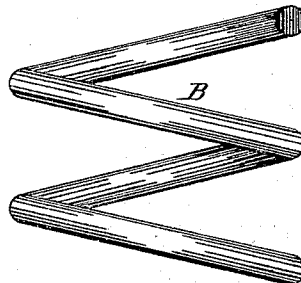
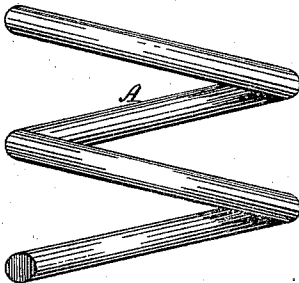


Fig. 4.

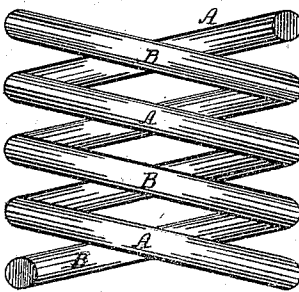
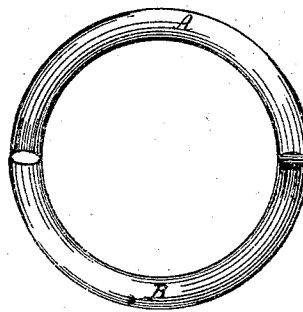


Fig. 5.



Witnesses:

Walter P. Hansell
J. Westmeyer,

Inventor:

John W. Culmer,
By John W. Culmer, Attorney,
his Attorneys.

UNITED STATES PATENT OFFICE.

JOHN W. CULMER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF THREE-FOURTHS HIS RIGHT TO C. J. CLARKE, G. B. EDWARDS, AND ANDREW HOWARD, OF SAME PLACE.

IMPROVEMENT IN CAR-SPRINGS.

Specification forming part of Letters Patent No. 134,646, dated January 7, 1873.

To all whom it may concern:

Be it known that I, JOHN W. CULMER, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Coil Springs, of which the following is a specification:

My invention relates to an improvement in the metallic spiral or coiled spring used for the axles of railroad-car trucks; and the invention which forms the subject-matter of this patent consists in a compound spring, composed of two or more separate spiral springs of the same pitch, intercoiled upon the same plane or common diameter, and applied to the journal-boxes for action in connection with suitable sustaining and retaining devices and stops for the ends of the springs, or in any convenient manner. In practice, however, I prefer to apply this spring in connection with certain devices which form the subject of a separate patent granted to me bearing even date herewith.

In the accompanying drawing, Figure 1 represents a side elevation of my improved spring, with the retaining parts in position and shown in section; Fig. 2 represents the intercoiled springs detached and separate from each other; Fig. 3, a top view of the intercoiled springs; and Fig. 4, an elevation of the intercoiled springs.

The spring consists of two spirals, A and B, intercoiled about a common cylindrical core in such manner that the corresponding surfaces of each are upon the same plane or substantially so. The pitch of these coils is unusually sharp, so much so that although the space for play in the completed compound spring is about the same as that allowed by any single spiral having a pitch sufficiently low to make the number of coils in the former made by two, the space between any adjacent coils of A or B is quite or more than twice as great, and the resistance to pressure afforded by both is consequently increased in proportion. Experiments have established, and it

may be readily demonstrated, that the resistance of any single spring increases in direct ratio to the increase of space between its adjacent coils, and the consequent increase of their pitch. Therefore, if I take a spiral spring of four coils or turns—say, eight inches from end to end, giving one inch between each coil, and draw it out to sixteen inches from end to end—its resistance becomes nearly or three times as great as at first; now, cutting it in two, I have two springs, each of eight inches from end to end, and each having three times the resistance of the original eight-inch spring, and these two being intercoiled will give about six times the resistance of the first and double the strength to resist breakage, and the same space for play.

In practice the pitch will vary under varying conditions and for different uses; but care must always be taken to afford sufficient space between the coils for proper play, without any interference which might cause unpleasant shocks and injure the temper of the metal. Should one spiral by any accident become injured or broken, which is most improbable, the other will remain with more than the full strength of the ordinary spring to supply its place, until a new spring can be fitted. My device, therefore, secures greater strength, resistance, and safety, with no increase of cost over the common spiral, for which it may be readily substituted upon the ordinary car-springs with no special adaptation of the securing and retaining agents now in use.

Having described my invention, I claim—

A compound spring composed of two or more separate spiral springs of the same pitch intercoiled upon a common diameter or the same plane, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 3d day of October, A. D. 1872.

JNO. W. CULMER.

Witnesses:

GEO. R. SHAW,

A. P. RUTHERFORD.