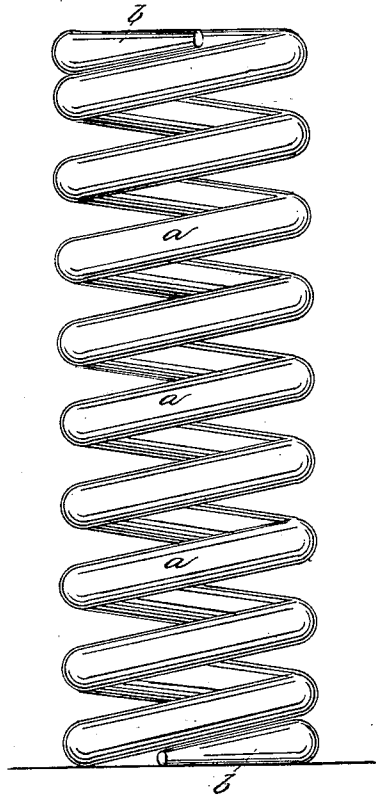


F. W. RHINELANDER.

Car Spring.

No. 100,926.

Patented March 15, 1870.



WITNESSES:

John D. Shaw
William H. [unclear]

INVENTOR:

Frederic W. Rhinelanders
by his attorney
A. [unclear]

United States Patent Office.

FREDERIC W. RHINELANDER, OF NEW YORK, N. Y.

Letters Patent No. 100,926, dated March 15, 1870.

IMPROVEMENT IN SPIRAL SPRINGS FOR RAILWAY CARS.

The Schedule referred to in these Letters Patent and making part of the same

To whom it may concern:

Be it known that I, FREDERIC W. RHINELANDER, of the city, county, and State of New York, have invented certain new and useful Improvements in Spiral Springs for Railway Cars and other purposes; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, which represents an elevation of a spring made in accordance with my invention.

In the manufacture of spiral springs, it is well known that the rod or bar of which the spring is formed has a natural tendency to turn on its axis in the process of coiling. When a flat rod or bar—that is to say, one that has a rectangular sectional area—is used, this tendency is resisted, and the strain upon the metal induced by this resistance is demonstrated by the fact, that in the “flat-bar” coiled spring, there is a change in the bar from a rectangular to an irregular-formed section. In coiling a round bar, or one having a cylindrical section, this tendency need not be interfered with, and, as in such instance the strain upon the metal will be avoided, it may be said that the “round bar,” up to a diameter, at least, which admits of properly tempering the metal, is, therefore, the best for spiral springs.

Spirals made of “round bars” are generally drawn or ground down at the ends, so as to give an even bearing-surface; or, where they are not thus finished, the ends are, for the same purpose, fitted into grooved recesses of proper shape in top and bottom plates. The flattening, drawing down, or grinding of the ends, so as to give them a wedge-like shape, with one or more flat faces, is only practicable after the spring has been coiled. The difficulty in forming the ends in this way before coiling would be in determining how much the bar will turn on its axis in coiling, for upon this would depend the position which the flat face of the tapering wedge-shaped end must occupy. One flat end—the one first coiled—could be properly placed without difficulty, but it would be almost impossible to coil the bar so that the opposite end should present its flat surface.

My invention is designed not to interfere with the tendency of the bar to turn upon its axis during coiling, but, at the same time, to cause the ends, whatever may be the twist of the bar, to present a flat bearing-surface; and to this end,

The invention consists of a spiral spring, formed of a bar or rod of metal, having a cylindrical sectional area, with conically-tapered ends, which, when the spring is coiled, will, without interfering with the tendency of the bar to turn or twist upon its axis, present at all times a flat bearing-surface, and render unnecessary the operation of drawing down or grinding the ends after the coiling has been completed.

To enable those skilled in the art to understand and use my invention, I will now proceed to describe the manner in which the same is or may be carried into effect, by reference to the accompanying drawing.

The spring there represented—coiled in the usual way and by ordinary or suitable means—is composed of a bar or rod, *a*, of cylindrical section, which, before being coiled, has its ends *b* conically tapered. The taper need only extend to the top and bottom folds of the coil, or to so much thereof as needed in order to make a flat bearing-surface.

Under this arrangement, the bar is perfectly free to turn upon its axis during process of coiling, while it is impossible, with the conically-shaped ends, not to obtain a flat bearing-surface for the top and bottom of the springs, thus dispensing entirely with any grinding or drawing of the ends after the formation of the springs, and saving the time, labor, and expense which these operations would give rise to.

By the use of the round bar with conically-tapered ends, spirals may be coiled more cheaply, accurately, easily than heretofore has been the case, and with quite as even bearing-surfaces as it has been hitherto practicable to produce.

Having now described my invention, and the manner in which the same is or may be carried into effect,

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

A spiral spring, formed of a bar or rod of metal of cylindrical section, with conically-tapered ends, substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

F. W. RHINELANDER.

Witnesses:

A. GALLATIN STEVENS,
FREDERIC W. STEVENS.