F. W. RHINELANDER.

Car Spring.

No. 103,778. Patented May 31, 1870.

Fig. 1.

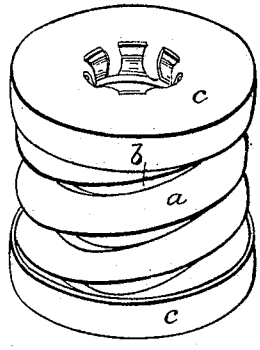
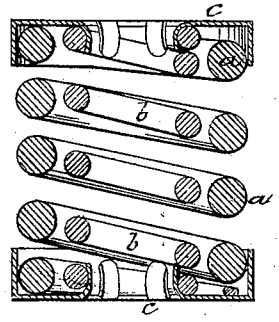


Fig. 2.



Witnesses
W. Bailey
Thos. H. McCleave

Frederick W. Rhinelander.
by his attorney
R. Pollok

UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN CAR-SPRINGS.

Specification forming part of Letters Patent No. **103,778**, dated May 31, 1870.

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 Springs for Railway-Cars and other purposes, of which the following is a specification:

My invention is directed to spiral nest-springs—that is to say, spiral springs placed one within the other "in nest"—so that all the springs will act together as one spring, the spirals being coiled either in the same direction or alternately, the one to the right and the other to the left, as may be preferred.

The object of my invention is to combine with such a nest-spring a plate or plates, fitting over and held to the ends of the several spirals which form the nest, in such manner as to hold together the spirals and give the spring an even bearing-surface at its top or bottom.

The manner in which this object is attained will be fully understood by reference to the accompanying drawing, in which—

Figure 1 is a perspective view of a spring provided with bearing-surfaces in accordance with my invention. Fig. 2 is a longitudinal central section of the same.

The nest in this instance is composed of two coils or spirals, *a b;* but of course a greater number may be used, if desired, and the spirals may be arranged to run in the same direction, as shown in the drawing, or alternately in opposite directions, as may be desired.

The ends of the springs should, preferably, be flattened or ground down to a taper, or tapered in accordance with the invention described in Letters Patent No. 100,926, granted to me on the 15th March, 1870, or they might be left untapered, but not with such good results.

In order to provide a firm and even bearing-surface for the nest-spring, and at the same time to hold together at their ends the several spirals, I apply to each end of the spring a plate or plates, *c*, which are bent over to embrace the top folds of the outer and inner spirals, clamping the same so as to be fixed to, and in effect to form a part of, the spring. These plates constitute the bearing-surfaces of the spring, and serve at the same time to hold all parts of the spring together in whatever position the spring may be placed. These bearing plates or caps may be made of boiler-plate, or of other metal, of any thickness desired, and can be applied to and bent upon the ends of the spring in any suitable manner.

Instead of employing one plate, *c*, at each end, two or more straps of any suitable width may be employed, which can be bent over the spirals in the same manner as above described, and which may be placed as near to each other as may be found necessary in order to form the even bearing-surface which it is the object of my invention to produce. I prefer, however, the use of a single plate or cap at the top and bottom of the spring.

I am aware that nest-springs have been inclosed in casings with top and bottom caps, upon which the springs would bear; but by my invention the casing is dispensed with, and a plate is employed, which is clamped upon and fixed to the spring, and not only forms a bearing-surface, but also serves to hold the different spirals together, and admits of the nest being handled and transported with the same facility as if it were a single spring.

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 nest-spring provided at one or both ends with a plate or plates applied to and secured upon the same, so as to form an even bearing-surface, substantially as shown and described.

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

FREDERIC W. RHINELANDER.

Witnesses:

A. GALLATIN STEVENS,
FREDERIC W. STEVENS.