

W. R. NICHOLS.

Car Spring.

No. 102,421.

Patented April 26, 1870.

FIG. 1.

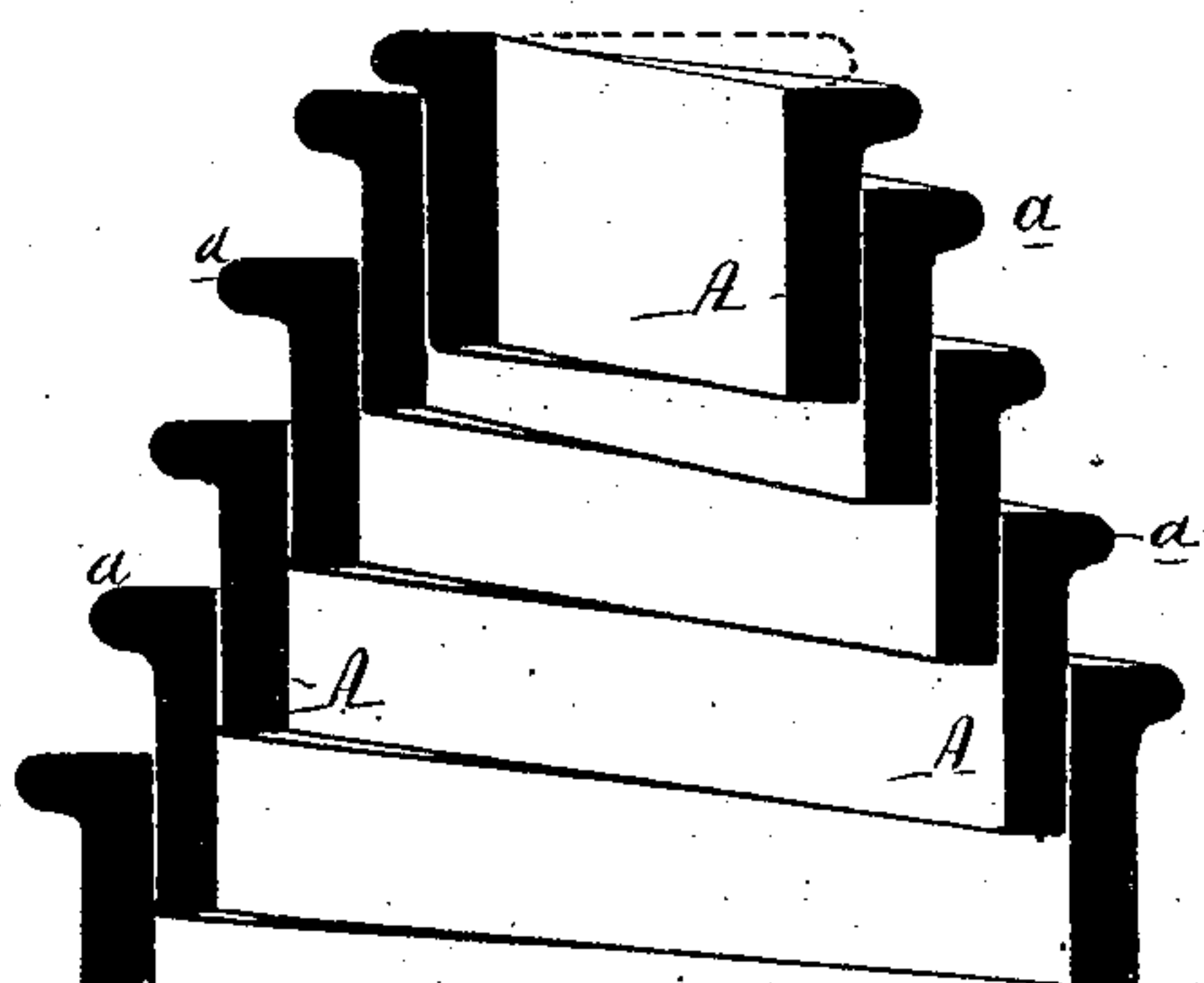


FIG. 2.

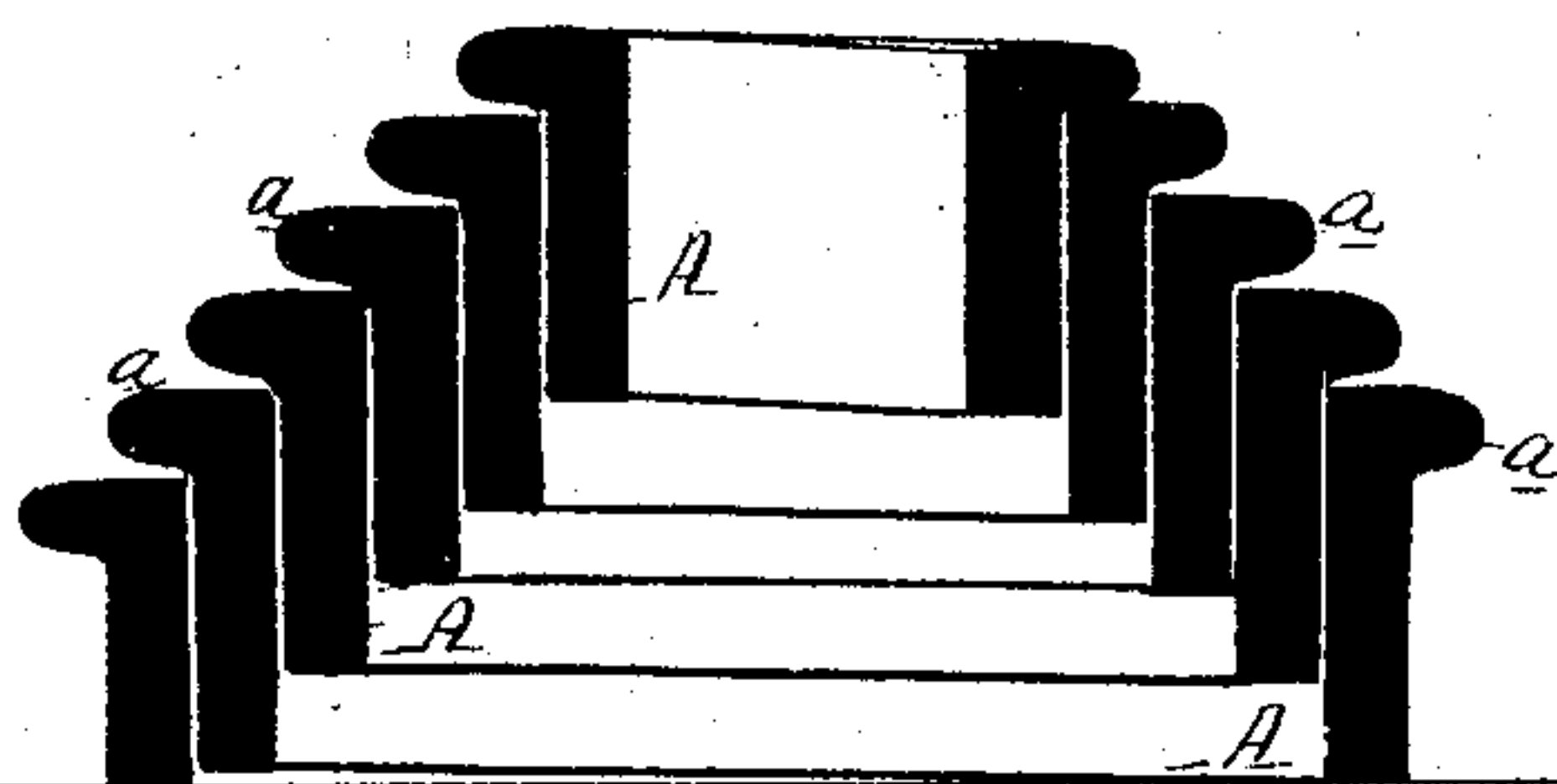
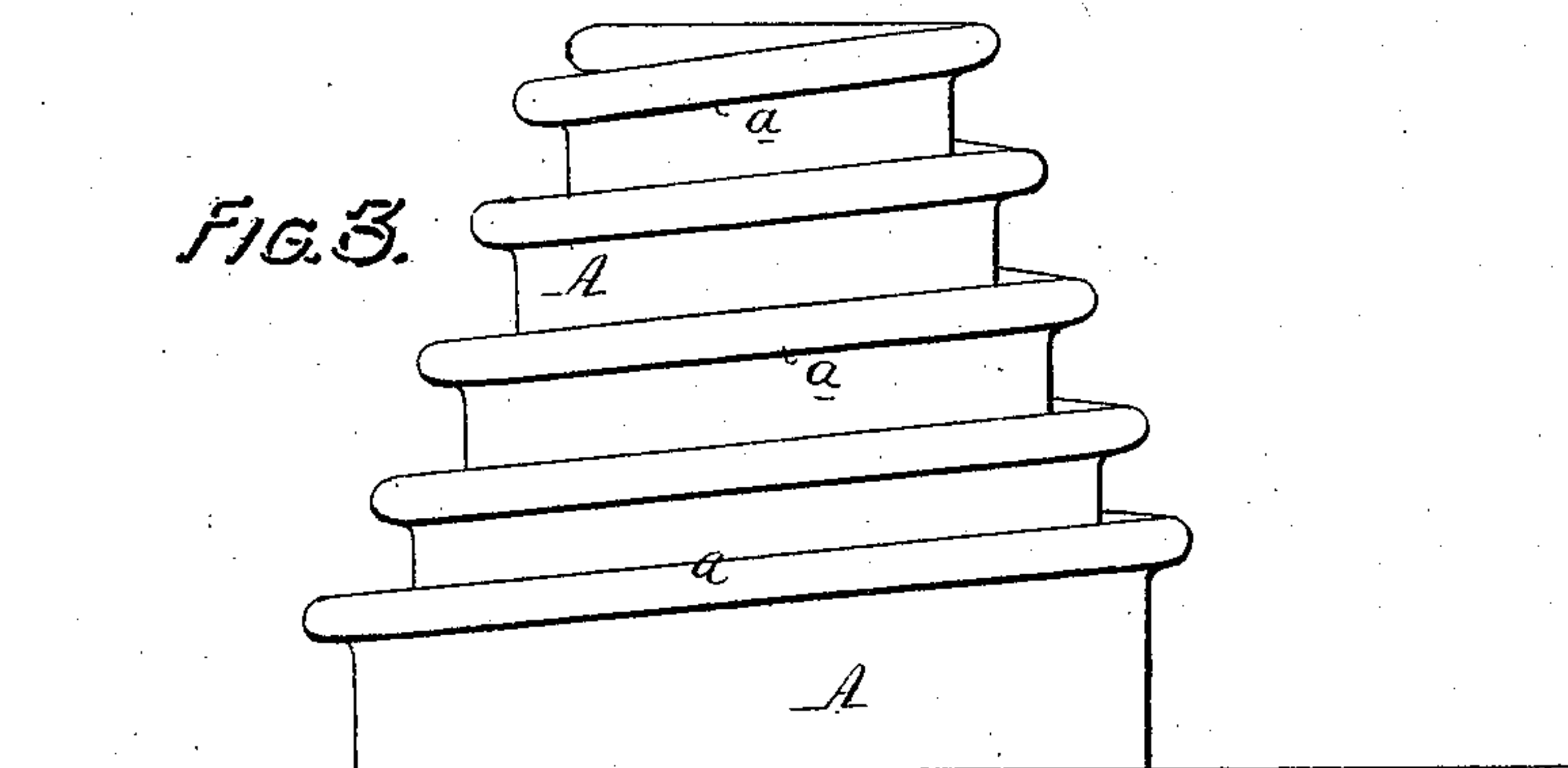


FIG. 3.



WITNESSES,

*Wm. A. Steel.*  
*Jno. B. Harding.*

*W. R. Nichols*  
*by his Attor.*  
*Howson and Son.*

# United States Patent Office.

WILLIAM RHODA NICHOLS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR  
TO NICHOLS, PICKERING & CO., OF SAME PLACE.

*Letters Patent No. 102,421, dated April 26, 1870.*

## IMPROVEMENT IN HELICAL SPRINGS.

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

I, WILLIAM RHODA NICHOLS, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an Improved Helical Spring for Railroad Cars, of which the following is a specification.

### *Nature and Object of the Invention.*

My invention relates to an improvement in the construction of helical springs for railway cars and for other purposes; and

My improvement consists in making the spring of bar steel, arranged in vertical parallel coils, with an upper external flange, as described hereafter.

The object of my invention is to improve springs of this class, both as regards lateral stability and elasticity, and at the same time to reduce the cost by a reduction of weight.

### *Description of the Accompanying Drawing.*

Figure 1 is a vertical section of my improved helical spring for railroad cars.

Figure 2, the same as it appears when compressed to its utmost limit.

Figure 3, an exterior view of the spring.

### *General Description.*

It will be seen, on reference to the drawing, that my improved spring consists of a flanged bar, A, of steel, coiled in the form of a helix, the flange *a* being on the exterior of the bar and at the upper edge of the same, and the coils being so arranged that while one is with-

in, it shall not be in contact with the other, while the flanges are at all times free from contact with each other and with any other part of the spring, unless the latter be compressed to its utmost limits, as shown in fig. 2, a point to which the spring has rarely, if ever, to be compressed.

I am aware that helical springs have been made both of plain flat bars of steel and of bars with a flange on each edge; but I have found, after repeated tests, that the most effective helical spring can be produced by coiling a bar with single external flange situated at the upper edge of the coil, providing the folds are arranged vertically and parallel with each other, as shown in the drawing.

While my improved helical spring may be made somewhat higher than those of ordinary construction, owing to the presence of the external flanges *a*, the latter impart a lateral stability to the spring, without impairing its elastic properties.

### *Claim.*

A helical spring, composed of vertical and parallel coils, with upper external flange, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM RHODA NICHOLS.

Witnesses:

P. B. JONES,

CHAS. E. PANCOAST.