W. F. Ray,
Car-Spring.

No. 71,912. Patented Dec. 10. 1867.

Fig. 1.

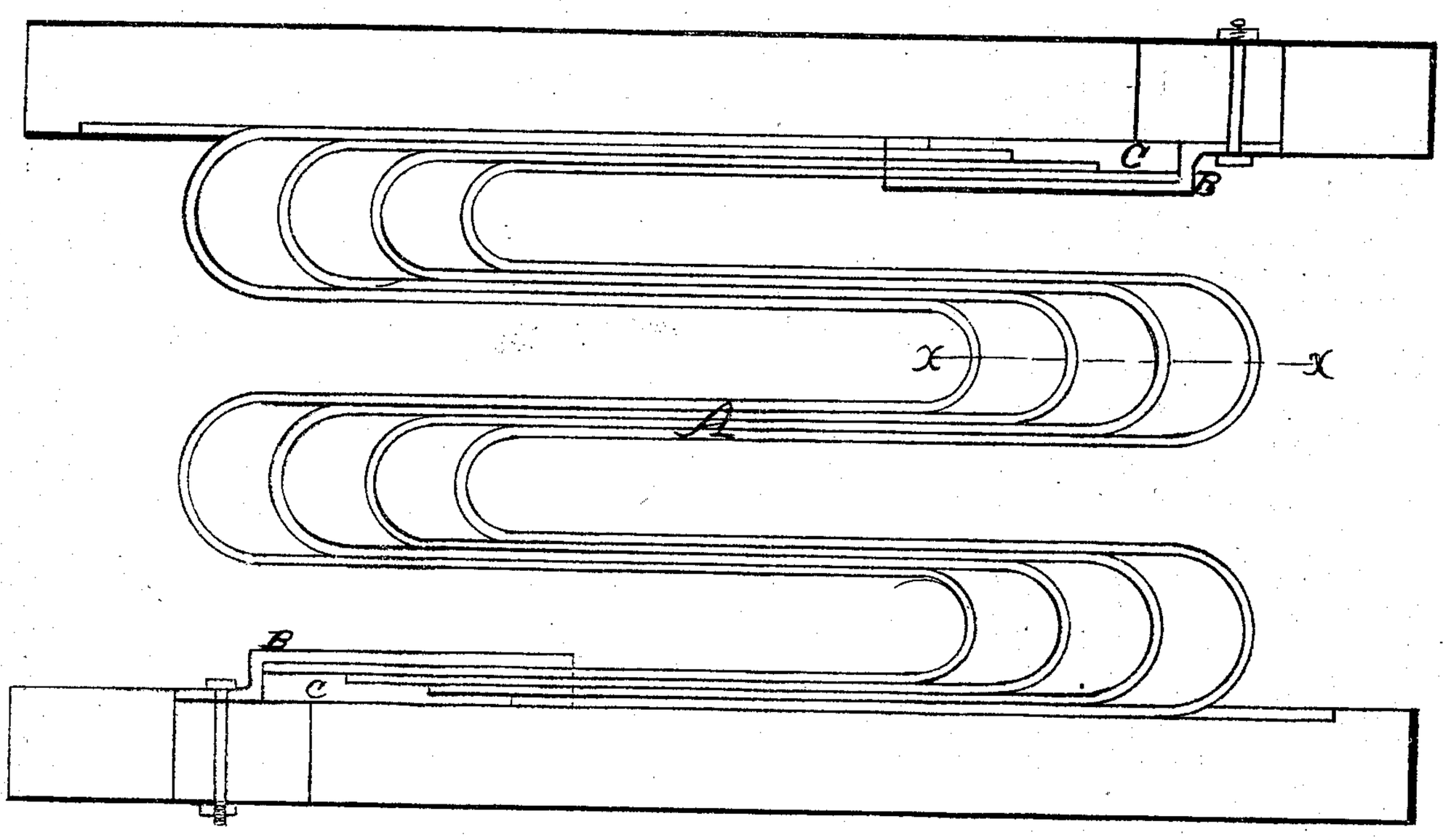
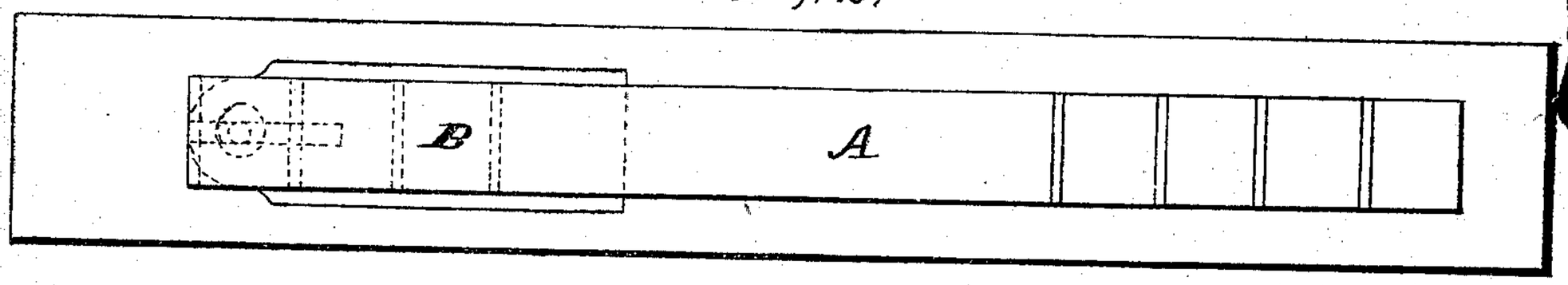


Fig. 2.



Attest
H. F. Millson.
Geo Esmond

W. F. Ray

United States Patent Office.

WILLIAM F. RAY, OF FORT WAYNE, INDIANA.

Letters Patent No. 71,912, *dated December* 10, 1867.

CAR-SPRING.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM F. RAY, of Fort Wayne, in the county of Allen, and State of Indiana, have invented certain new and useful Improvements in Engine, Car, and Carriage-Springs, or for other purposes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon. In the drawings—

Figure 1 is a side elevation.

Figure 2 is a plan view sectioned in line *x x*, fig. 1.

The nature of my invention consists in the arrangement and construction of metallic springs for cars, &c., &c., which, although light and exceedingly elastic, possess great strength and resistance. By the peculiar arrangement and combination of the parts the springs may be so adjusted that the power or resistance may be increased or decreased to an almost unlimited extent.

To enable others skilled in the arts to make and use my invention, I will describe its construction and operation.

A represents metallic bars, of a suitable length, width, and thickness. These bars are bent at intervals alternately in opposite directions, as seen in fig. 1, so that the curve of each bend forms a semicircle. The straight portion of the bars which extend from curve to curve, run parallel and fit snugly together. As many bends as the requirements of the case may justify may be made. B B represent clamps, which are constructed in the manner shown in the drawings, and are adjusted to the respective ends of the springs, in such a manner as to secure them in position. These clamps may be either secured by means of bolts or otherwise. C C represent stops, which may be made of metal or other material. They are so constructed that they fill or fit into the space formed by the bending of the springs. It will be observed that, as the bars are of equal length when they are bent, the outside bar falls short of extending to the same point reached by the inside bar; hence the necessity of the use of stops C C. Their particular functions are to give a permanent bearing to the end of the respective bars, and thus enable them more effectually to counteract the resistance and necessary vibrations to which they are constantly submitted. The stops C C may be made of any length to suit any desired adjustment of the spring. It will be readily understood that springs made in this form may be easily adjusted by sliding the respective bars out, as seen in fig. 1, or in, so that their curved portions come in direct contact. The effect of this adjustment is, in the latter case, to render the spring much less capable of resistance, thus adapting it to lighter weights without in the least changing its flexibility or elasticity, while in the first case the strength or power of resistance is increased just in proportion to the distance they are separated, without in the least impairing their elasticity, thus, by a new adjustment, easily effected, adapting this spring to the contingency of the case. I use one or more bars in the construction of these springs, which may be flat, round, square, tubular, oval, or in any other form. I also use the same spring with or without packing of rubber, or cork, or other elastic substance. Said packing to be inserted between the folds of the springs in such a manner as to add strength or elasticity to the same.

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

A series of reflexed springs, so constructed that the bows slide into each other, the whole being adjustable so as to regulate the amount of elasticity, as described.

W. F. RAY. [L. S.]

Witnesses:

H. F. MILLSON,

GEO. ESMOND.