A. E. WOLCOTT.

Carriage Spring.

No. 90,146. Patented May 18, 1869.

Fig. 1.

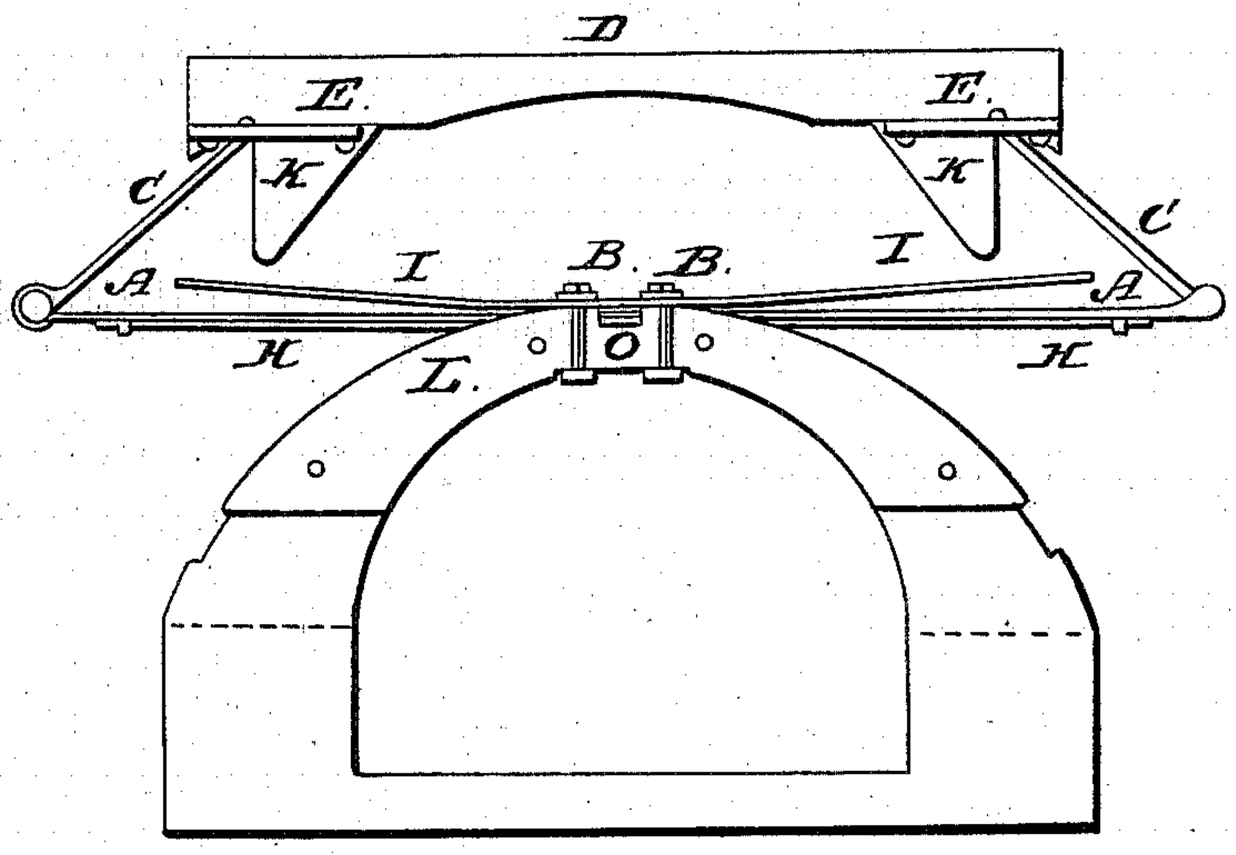

Fig. 2

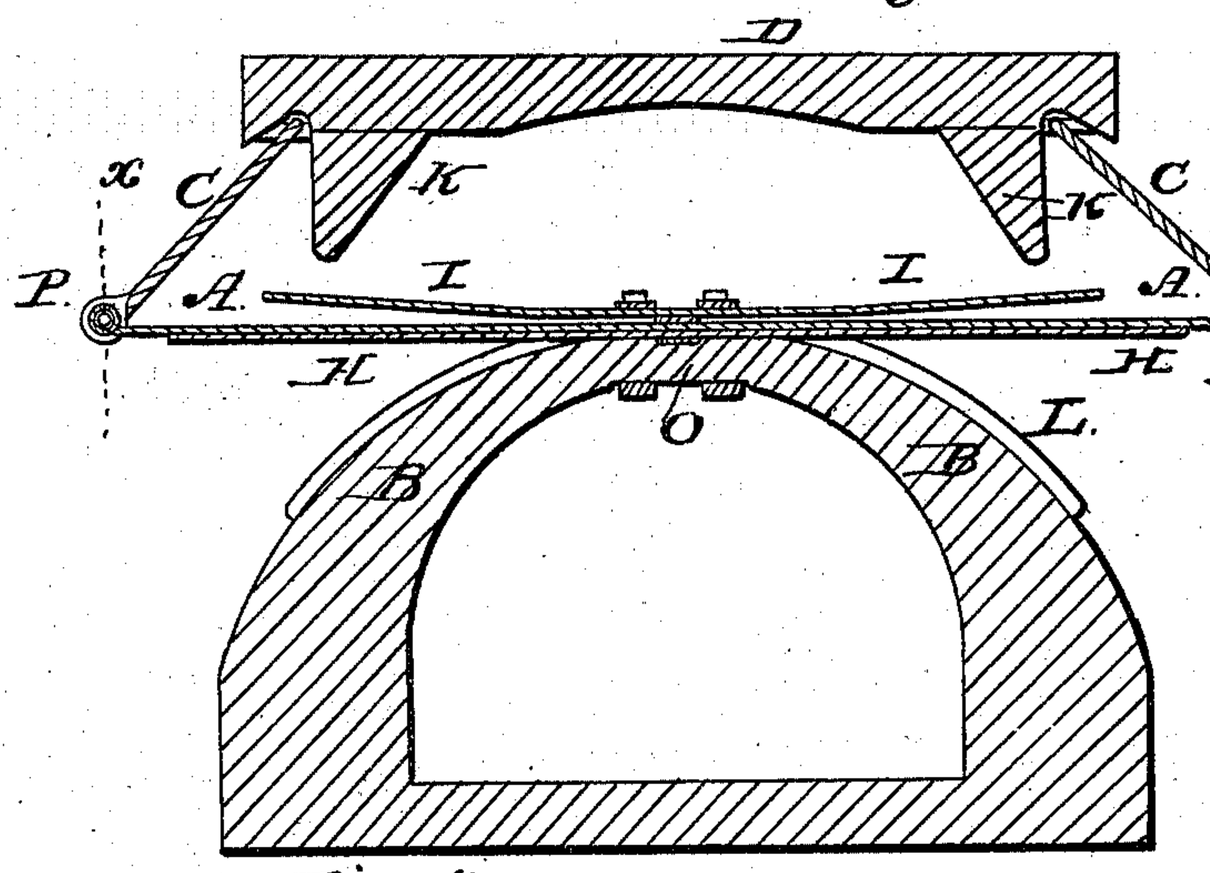

Fig. 3

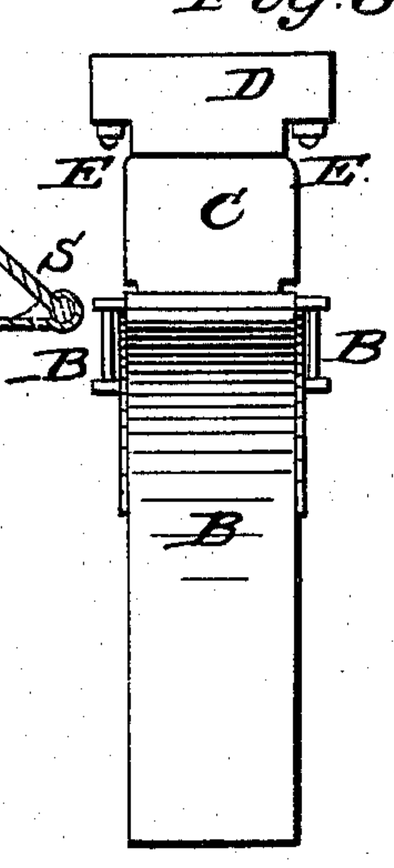

Fig. 4

Fig. 5

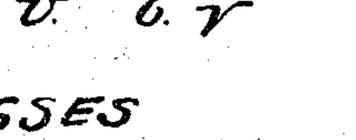

Fig. 6

WITNESSES

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ALLYN E. WOLCOTT, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND ISAAC SIMMONS, OF BALTIMORE, MARYLAND.

Letters Patent No. 90,146, *dated May* 18, 1869.

IMPROVED CARRIAGE-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, ALLYN E. WOLCOTT, of Chicago, in the county of Cook, and State of Illinois, have invented a new and useful Improvement in Metallic Springs; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and the letters and figures marked thereon, which form a part of this specification, and in which—

Figure 1 represents a side elevation of my metallic spring.

Figure 2, a vertical sectional view of the same.

Figure 3, an end view.

Figure 4, a section at the line *x*.

Figures 5 and 6, a view of the bolt and attachment that couples the link to the spring.

The nature of my invention consists in the combination of a straight metallic spring and a curved bearing; and also, in combination with a metallic spring resting upon a curved bearing, the jointed links, or force-arms, the auxiliary ledges and springs, and also the flanges and end cross-pieces, to hold the spring in place, as hereafter more fully described.

To enable those skilled in the art to understand how to manufacture and use my invention, I will proceed to describe the same with particularity.

The same letters of reference refer to corresponding parts in the different figures.

In the annexed drawing—

A represents a metallic spring, tempered straight, and

B, a circular bearing for the spring.

The weight is applied at the ends of the springs, through the link, or arms C, which are jointed or hinged to the ends of the springs, as hereafter fully described.

The weight may be applied to the upper end of the said links, or arms, through a connecting-bar, or beam D, which rests upon the links, or arms C, in such a way as not to make a rigid connection, but to make such a connection that the links or arms will change their angle to the line of motion of the connecting-beam D, as the spring vibrates.

In the annexed drawings there are ears, or projections on the end of the links C that project under the pieces E, and hold them in their bearings on the connecting-beam, and at the same time allow them to vibrate laterally.

There may be one or more resilient springs H beneath the spring to which the links C are attached, and there may also be one or more spring-plates I above it, for the purpose of strengthening it; but when there are plates I, it is necessary to have the ledges K beneath the connecting-beam D, to act upon the additional spring-plate I, and the ledges should be of such length as to strike the curved bearing B as the springs are sprung down, at the same time the links or arms C strike it.

There is a short plane at the apex of the curved bearing B for the springs to rest upon, and there are notches cut in the flanges L for projections O, that are fastened to the springs, to rest in.

The flanges L guide the springs upon the curved bearings, the projections O serve to keep them from slipping on the bearing, and they are firmly clamped thereon by the clamps R.

The best form for the curved bearing is circular, for then the spring is curved at all points alike, as it is sprung down upon the bearing, and the size of the circular bearing, compared with the length of the spring, can be varied; but it should be sufficiently large, so that the spring will strike down its entire length without breaking.

The yielding length or leverage of the spring, it will be observed, begins to shorten, the moment it begins to bend, and, also, the links C begin to press more lengthwise of the spring, which serves to keep the spring in a tense strain lengthwise.

I make the comparative length of the links C such that when the ends of the spring-plate to which they are attached strike the bearing, they form a tangent to the circle which describes the face of the bearing.

The ends of the resilient plate, or spring to which the adjusting-links C are attached, are curved over, and form a socket for the end of the link to rest in, and in order to prevent the friction of the link from wearing the spring, I put in a friction-box, *b*, that can be readily removed when worn.

Instead of the end of the link resting in a socket fomed by the end of the spring, as shown at S, a bolt, T, passes through the friction-box, enclosed in the end of the spring, the bolt also passing through ears, or projections U, on the lower end of the links, the holes through the ears being made square, or of any irregular form; and that part of the bolt which is within the ears, being also made to fit the same, causes the bolt to be held by the arm while the friction-box turns on said bolt. This box can be removed when worn.

It will be seen that one or more set of adjusting-links, with a corresponding number of resilient plates, one resting upon another, could be used with one curve bearing and one connecting-beam, but when more than one set is used, they should be of such comparative length, and so arranged, as to all strike the curved bearing at the same time.

There may be lips, or projections on the sides of the spring A, extending down to keep the auxiliary springs in pile.

By making a spring in this shape, I have the advantage of tempering it in its simplest form, whereby a uniform thickness and texture of metal is secured, and a uniform temper. Then, again, a spring is less

liable to be broken when bent from a straight line to a curve than when bent from a curve to a straight line.

By placing a spring upon a curved bearing, the leverage of the spring is diminished as the weight upon it is increased, which makes it less yielding, and at the same time the spring is no more liable to break, for all parts of the spring are thrown into a uniform curved position, and no part of it can be thrown past that fixed curve, whatever the weight may be. So far as the advantages of curved bearings and adjusting-links are concerned, they would obtain in about the same degree with curved springs.

Having thus described the construction and operation of my invention,

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

1. A straight metallic resilient plate, or spring, in combination with the auxiliary spring-plate I, or its equivalent, and a curved bearing or support, when arranged so as to operate substantially as described.

2. The combination of the adjusting-links, or arms C, a metallic resilient plate, or spring, and a curved bearing, when constructed and arranged so as to operate substantially as and for the purpose specified.

3. The connecting-beam, or bar D, adjusting-links, or arms C, resilient plate, or spring, and curved bearing, when constructed and operating substantially as described.

4. The flanges L and projections O, when constructed and operating substantially as and for the purposes shown and described.

5. The auxiliary ledges K and springs I, when constructed and arranged substantially as shown and specified.

Witnesses: ALLYN E. WOLCOTT.

LEWIS L. COBURN,

J. L. COBURN.