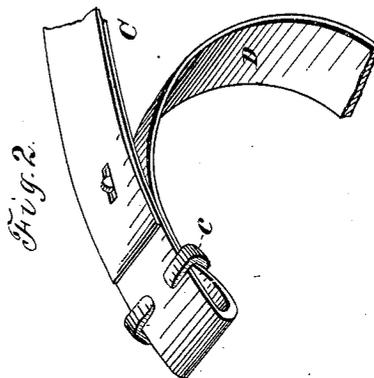
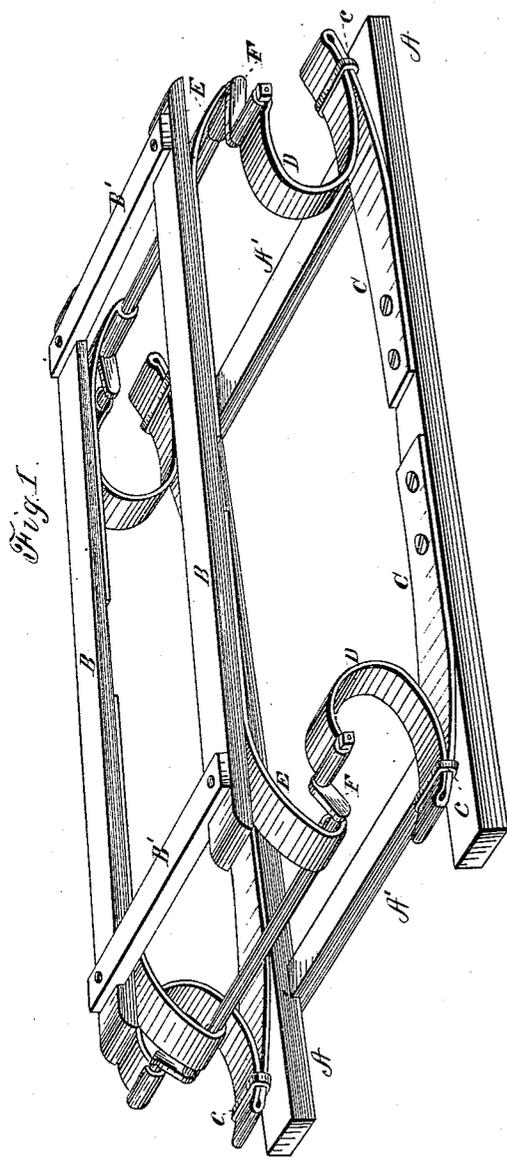


(No Model.)

C. NORTON.
CARRIAGE SPRING.

No. 251,274.

Patented Dec. 20, 1881.



Witnesses.

W. R. Eddien.
J. H. Strometz

Inventor:
Corydon Norton
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UNITED STATES PATENT OFFICE.

CORYDON NORTON, OF ALBION, PENNSYLVANIA.

CARRIAGE-SPRING.

SPECIFICATION forming part of Letters Patent No. 251,274, dated December 20, 1881.

Application filed April 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, CORYDON NORTON, a citizen of the United States, a resident of Albion, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Carriage-Springs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and the letters or figures of reference marked thereon.

My invention relates to the construction and arrangement of vehicle-springs.

The object of my invention is to produce a cheap, durable, and elastic spring for the purpose named.

My invention is illustrated in the accompanying drawings, as follows:

Figure 1 is a perspective view. Fig. 2 is a view showing a detail of construction.

A A are bars connecting the axles of the vehicle.

A' A' are cross-bars, which may be used or not, as desired.

B B and B' B' represent the body of the carriage or wagon.

It will be seen that the springs lie lengthwise of the carriage. They are composed of the following parts: C C are quarto-elliptic springs, but may be joined or formed of one piece, and thereby become semi-elliptic. D D are C-springs, formed by turning back the outer ends of the quarto-elliptic springs C. E E are quarto-elliptic springs. F is a crank-rod extending from one side of the carriage to the other, and on each side connects the springs E to the springs D in such a manner as to provide for a forward-and-backward movement of the carriage-body. Any of the springs C D E may be strengthened by extra leaves, if it is desired to do so. The springs C and D are formed of one piece of metal, the spring D being bent back upon the spring C, as clearly shown in the drawings, and then bent into proper form for a C-spring. On the loop formed by bending back to form the C-spring is placed a clip, *c*, which is clearly shown in Fig. 2. This clip or clasp is put on and then bent down firmly, and holds the

lower part of the C-spring D onto the upper part of the quarto elliptic spring C.

Rivets might be used in place of the clip *c*, but they would weaken the material. If, however, rivets are used, the springs C and D may be of two separate pieces of metal; but I greatly prefer the construction shown:

When the carriage is not heavily weighted the springs C and E will furnish all the elasticity required; but when the load is increased beyond their capacity the C-spring, which by its form is stiffer, will be brought into action.

When the carriage is not occupied the crank of the rod F will stand nearly horizontal; but as the load upon the springs increases it turns toward a vertical position. The crank-rod also serves to permit an oscillation of the carriage-body longitudinally, which gives a pleasant effect, and when the carriage-wheels strike in a rut or against an obstruction it relieves the springs of the wrenching effect which would otherwise take place.

I am aware that a crank-rod similar in construction and for a similar purpose has been used, but in connection with springs having a different form.

It is not essential to the operation of my springs that the crank-connection be a rod extending across the buggy.

This spring is capable of use in other than buggy or vehicle springs. It may be used for a bed spring without any material change from the construction shown in the drawings.

What I claim as new is—

1. In a carriage spring, a quarto or semi-elliptical spring having at its outer end, upon its upper side, a C-spring facing outward therefrom, substantially as described.

2. In a carriage-spring, a quarto or semi-elliptical spring having at its outer end a C-spring, bent backward and facing outward therefrom, formed of the same piece of metal, substantially as described.

3. In a carriage-spring, a quarto or semi-elliptical spring having a C-spring formed of the same piece of metal bent back upon it at its outer end and bound thereto at a point back of the loop, substantially as described.

4. In a carriage-spring, the combination, with the springs C and D, formed of one piece of metal, of the clip or clamp *c*, substantially as shown.

5 5. A carriage-spring consisting of the springs C D E, clip *c*, and crank-connection F, combined and arranged to operate substantially as shown.

In testimony that I claim the foregoing I have hereunto set my hand this 18th day of 10 March, 1881.

CORYDON NORTON.

Witnesses:

JNO. K. HALLOCK,
ISAAC OPPENHEIMER.