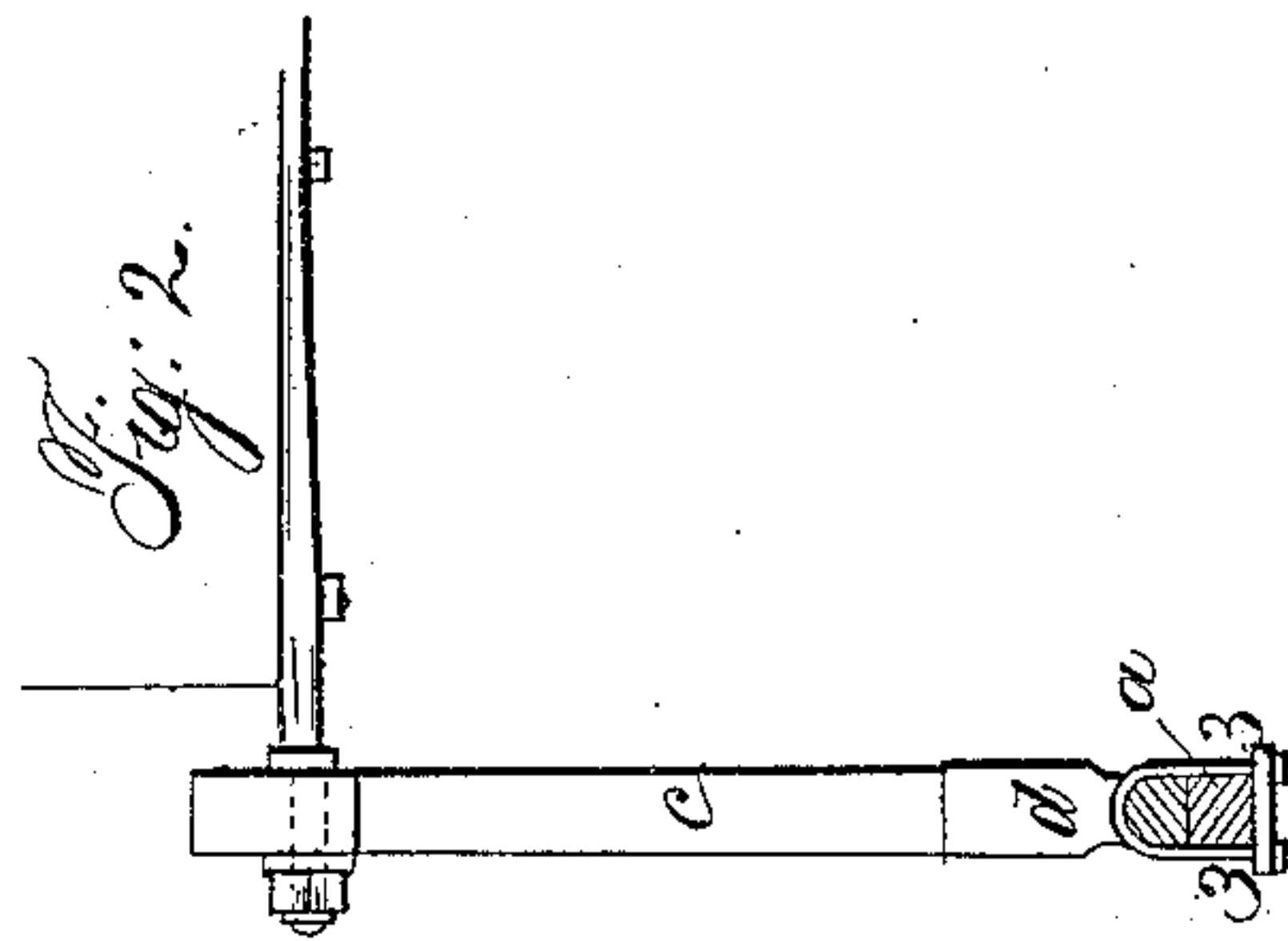
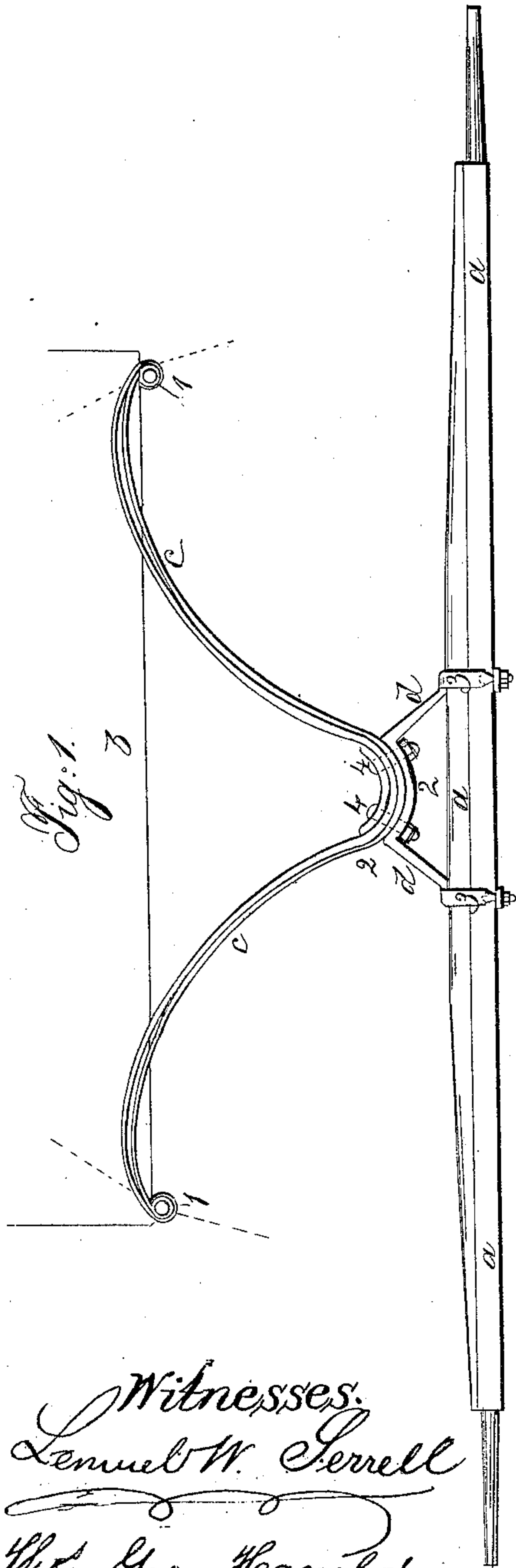


E. MAYNARD.
Carriage-Spring.

No. 27,731

Patented Apr. 3, 1860.



Witnesses:
Lemuel W. Serrell
Geo. Geo. Harold

Inventor:
E. Maynard

UNITED STATES PATENT OFFICE.

EDWARD MAYNARD, OF BROOKLYN, NEW YORK.

CARRIAGE-SPRING.

Specification of Letters Patent No. 27,731, dated April 3, 1860.

To all whom it may concern:

Be it known that I, EDWARD MAYNARD, of Brooklyn, in the county of Kings and State of New York, have invented and made a certain Improvement in Springs for Carriages; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the said invention, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1, is an elevation of said spring and Fig. 2, is an end view of the same.

Like characters denote the same parts.

In light carriages adapted to the pavements of cities particularly, there is more need of a sidewise spring and play than simply a vertical motion, because the wheels rolling over the stones do not impart much vibration; but the wheels slipping down into ruts and sidewise off of the round or cobble stones, give a very unpleasant sidewise jar to the rider. The elliptic springs being adapted principally to a vertical motion do not obviate the difficulties before mentioned, and the various suspension springs heretofore constructed do not remove said objections.

The nature of my said invention consists in a double curved wing shaped spring resting at the center of the axle and taking at its extremities the body of the wagon in such a manner that while allowing vertical motion sufficient for removing concussion, the body of the carriage or wagon is allowed to remain almost quiescent, because a side movement and jar can be given to the wheels, and the spring yielding prevents this movement communicating with the body of the carriage. Beside this I connect my spring to the axle in such a manner that the axle is not weakened by bolt holes through the same and the spring is very firmly held in its place.

In the drawing *a*, represents the carriage axle, *b*, the carriage body or frame to be supported.

c, is my improved spring attached by the clip *d*, to the axle, and by the bolts 1, 1, to the body *b*. The clip *d*, is formed as a curved chair 2, 2, between the clip pieces 3, 3, that connect to the axle *a*, and the chair 2, receives the spring *c*, at the center thereof, at which point said spring is bent almost

to a semi circle, and the ends of the springs curve upwards from this center semi circle in the form of wings, to the bolts 1, 1.

4, 4, are bolts passing through the spring *c*, near the middle thereof and through the chair 2, so that said chair clip and spring are firmly connected to each other. The spring itself is formed of two or more leaves extending to and surrounding the bolts 1, 1, in the form of eyes, and the lower leaf of the spring being shorter than the upper one causes an opening between said leaves as shown, and prevents the two leaves binding onto each other under any compression.

It will now be evident that the spring starting from the chair 2, in an upward direction allows of a considerable lateral movement of the wheels without imparting that movement suddenly to the carriage body. At the same time all necessary vertical play is allowed for.

My spring is neat, handsome, cheap, compact, durable, does not require bolts through the axle by which the same would be weakened, and is especially adapted for light carriages and such as are used on streets of cities, although I do not limit myself in this particular.

It will be seen that in consequence of the double curved or wing shape which I give to my spring the same can be rigidly attached to the axle, and also direct to the bolts 1, 1, or body loops of the wagon, and that the spring is free to play up or down without any liability to cramp or break the same, because it not only is bent to a smaller curve under the operation of weight but the curved parts approach nearer each other, by the spring bending near its center parts on each side of the connection to the clip. The leaves of the spring each being extended to and bent around the eye, are kept in the proper relative positions and no liability exists of breakage as where the ends of the spring are riveted to each other.

The bolts 1, 1, taking the ends of the springs being formed at the ends of the irons or loops that pass along beneath the body, permit of dispensing with all the cross bars or frames heretofore used in connecting springs to wagon bodies, and all chains or links heretofore used between the spring and body are entirely dispensed with.

In my clip it will be seen that I not only

connect my spring firmly without any bolts passing through the axle, but I also remove the weight from the center of said axle and throw the same by the clips 3, 3, nearer
5 towards the wheels, dispensing the weight, and rendering the axle less liable to injury.

Having thus described the nature and operation of my said invention, what I claim and desire to secure by Letters Patent is—
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1. The double curved or wing shaped spring *c*, formed with separated leaves as set forth, and connected at the center part to the axle by means of the curved chair
15 clip or its equivalent and by eyes at the ends

to the bolts 1, 1, or body loops substantially as and for the purposes specified.

2. I also claim the chair clip *d*, to which the spring is firmly bolted, and which is attached to the axle by the two clip pieces 3, 3,
20 whereby the axle is not injured by bolt holes (for the springs) and the weight is distributed on said axle as specified.

In witness whereof I have hereunto set my signature this 16th day of January 1860. 25

E. MAYNARD.

Witnesses:

LEMUEL W. SERRELL,
THOS. GEO. HAROLD.