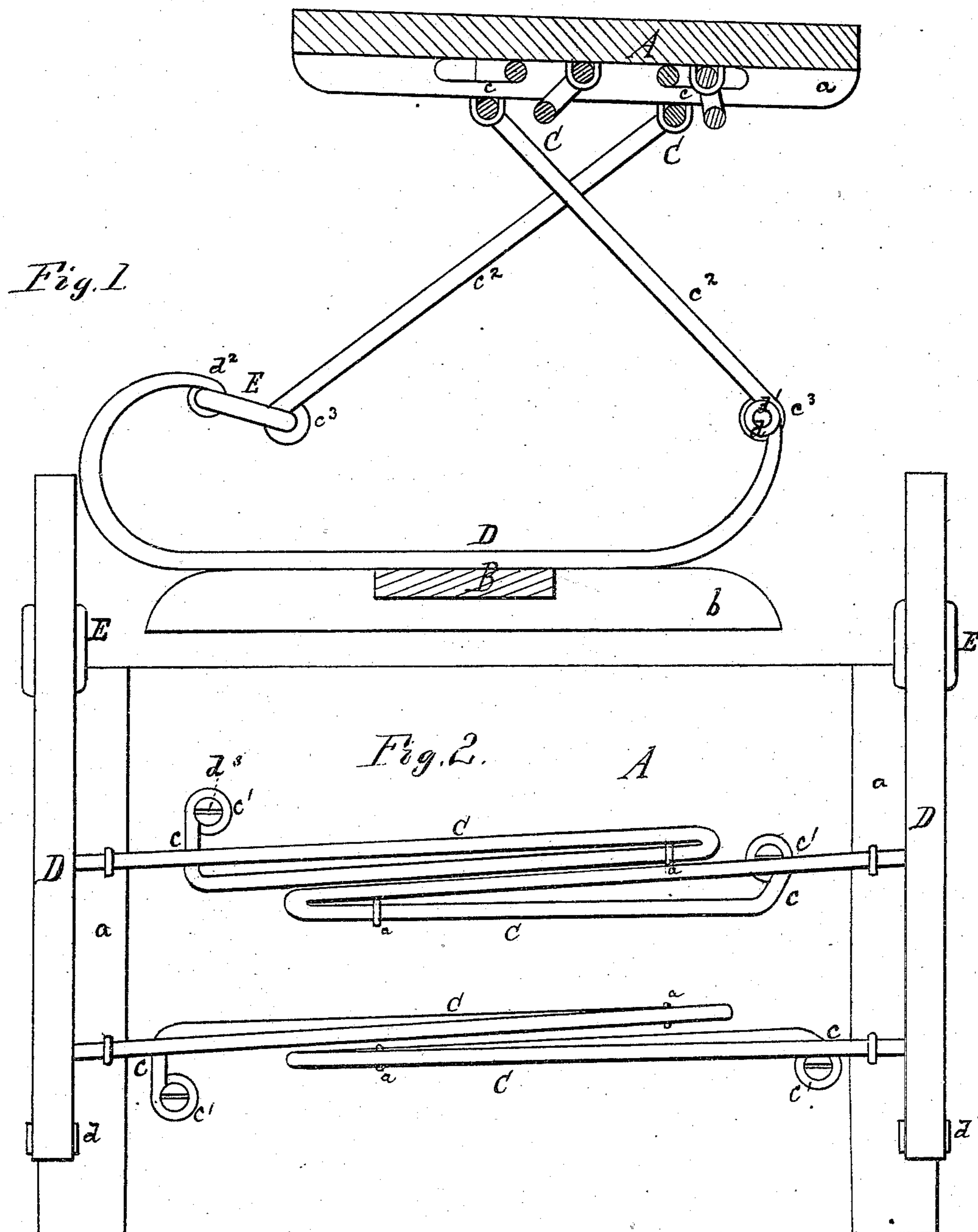


C. K. LEHMANN.
Seats for Carriages and Wagons.

No. 143,515.

Patented Oct. 7, 1873.



Witnesses.
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 George E. Upham.

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UNITED STATES PATENT OFFICE.

CHRISTIAN K. LEHMANN, OF SAVANNAH, OHIO.

IMPROVEMENT IN SEATS FOR CARRIAGES AND WAGONS.

Specification forming part of Letters Patent No. **143,515**, dated October 7, 1873; application filed June 9, 1873.

To all whom it may concern:

Be it known that I, CHRISTIAN K. LEHMANN, of Savannah, in the county of Ashland and State of Ohio, have invented a new and valuable Improvement in Carriage-Springs; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of my improved carriage-spring by a central cross-section. Fig. 2 is a bottom view of the same.

My invention relates to torsion-springs for vehicles; and it consists in the construction and arrangement of a torsion-spring, supporting-rod, and link, as will be hereinafter described. The object of my invention is to avoid the stiffness of short torsion-springs, and the weakness of thin torsion-springs, by doubling up a torsion-spring heavy enough for the purpose one or several times, thereby gaining a very long center line for the torsion without taking up more room for it than usual, and thereby gaining the same strength and ease of motion in a very small allowance of space by one single spring as a combination of smaller springs with single torsion-rods would afford.

In the drawings, my invention is represented as applied to a carriage-seat, and A denotes the seat-board, with the spring-bars *a* at the ends; and B denotes the connecting or brace bar of the lower spring-bars *b*. The springs C are so bent that they have short arms *c*, with eyes *c*¹, which serve to fasten them, with screws *d*³, to the carriage-seat. The torsional part of such a spring consists of a doubling of the spring-rod in U shape, and in the direction of the seat-board, forming a right angle with the arm *c*, and ending with another rectangular

arm, *c*², and an eye-bearing, *c*³. The arms *c*² are the movable arms, and they extend downward in a diagonal direction from the spring-bar *a* to an upwardly-curved steady-bar, D, with slotted end bosses *d* and pivot-pins *d*¹ at the front, and plain bosses *d*², with swinging chain-links E. The right and left front springs C are connected with the back parts of the bars D by means of the links E, which serve to aid the spring-arms *c*² in spreading when operated. The two rear springs C are connected to the front ends of the bars D by being inserted into the slotted bosses *d*, and by being secured thereto with pins *d*¹. The springs are so arranged and fastened to the seat-board that their torsional parts are at a distance, preventing their touching each other and interfering with each other's motion when operated. The last return-length of the spring is fastened to the board A by gas-pipe hooks or clamps, to keep the spring in the right position.

When operated, each return-length of the torsion part of the spring takes up a proportional part of the torsion, and the spring works with the same ease and power as if all the return-lengths were united into one straight rod.

I have also found that if I twist the wire in the direction of the torsional strain before the spring is shaped I obtain a more pliable spring, which is less apt to snap.

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

The combination of the torsion-springs C and the supporting steady-rods D with the links E, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

CHRISTIAN K. LEHMANN.

Witnesses:

N. J. PAXTON,

MARY A. PAXTON.