(No Model.)

C. A. HOWARD.

BOLSTER SPRING FOR VEHICLES.

No. 282,987. Patented Aug. 14, 1883.

Fig. 1.

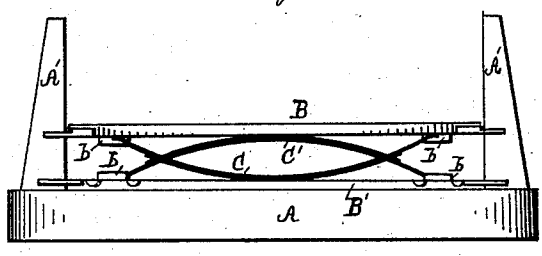


Fig. 2.

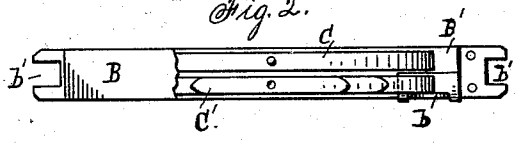


Fig. 3.

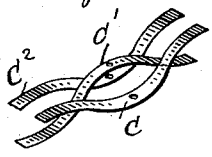
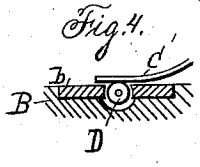


Fig. 4.



WITNESSES

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CHARLES A. HOWARD, OF PONTIAC, MICHIGAN.

BOLSTER-SPRING FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 282,987, dated August 14, 1883.

Application filed December 2, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. HOWARD, of Pontiac, county of Oakland, State of Michigan, have invented a new and useful Improvement in Bolster-Springs for Vehicles; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists in the combination of devices and appliances hereinafter specified, and more particularly pointed out in the claim.

In the drawings, Figure 1 is a side elevation of a device embodying my invention. Fig. 2 is a plan view with the upper cross-bar partially removed. Fig. 3 is a perspective view of a variation. Fig. 4 is a variation of the wearing-plate.

The object of my invention is to provide a bolster-spring economical in construction, which may be readily inserted upon a bolster underneath the box, and which may also be readily removed, if desired. I accomplish this purpose by combining two or more semi-elliptic cross-springs, secured in inverted position intermediate of their length, to an upper and lower cross-bar, these bars being adapted to be adjustably secured between the bolster-stakes, and provided with suitable wearing-plates for the ends of the springs.

Heretofore bolster-springs have been made consisting of a single semi-elliptic spring secured intermediate of its length to a cross-bar; but the tendency of a spring so constructed is to tilt at either side when the strain comes upon either end. By my invention, however, this difficulty is entirely overcome, as by having one or more of the springs inserted the whole acts as an equalizer, and any tilting, rocking, or sagging sidewise is thereby prevented.

In the drawings, A represents a wagon-bolster, and A′ the stakes. B is the upper and B′ the lower cross-bar. Said lower bar may be constructed of less width than the upper, if desired, as there is less strain upon it.

C represents a semi-elliptic cross-spring secured intermediate of its length firmly to the lower cross-bar, its extremities projecting upward against the upper cross-bar. C′ represents a similar spring secured intermediate of its length firmly to the upper cross-bar, its extremities projecting downward against the lower cross-bar. As so constructed the two springs, it will be seen, are reversed in position. The cross-bars are provided with suitable wearing-plates, *b*, for the ends of the springs. Said plates are preferably constructed with a recess, *b′*, to engage the bolster-stakes; or the wearing-plates and stake-plates may be made separate.

In Fig. 3, C² represents an additional cross-spring, similar to C and C′, secured intermediate of its length either to the upper or lower cross-bar. When the three are used, one will evidently be in the center, and have an additional spring on each side, the position of one being the reverse of that of the other two.

I would have it understood that I do not wish to confine myself to the use of two reversed semi-elliptic cross-springs, as my invention contemplates the use of two or more. As shown in Fig. 4, the wearing-plate is provided with a roller, D.

In the use of this device I prefer to flatten the ends of the springs, to make a suitable bearing-surface upon said rollers. It will be seen that by making the springs thin at the ends a suitable elasticity will be given them to secure an easy-riding spring when used without a load.

What I claim is—

The combination, with the upper and lower cross-bars, of two semi-elliptic springs arranged in reversed positions, one of said springs being arranged at one side of the other, so that the ends of the lower spring bear against and directly receive the thrusts of the upper cross-bar, while the ends of the upper spring bear against the lower cross-bar, substantially as shown and described.

In testimony whereof I sign this specification in the presence of two witnesses.

CHARLES A. HOWARD.

Witnesses:
N. S. WRIGHT,
A. E. INGLIS.