H. M. CURTIS.

Side-Bar Wagon.

No. 211,499. Patented Jan. 21, 1879.

Fig. 1

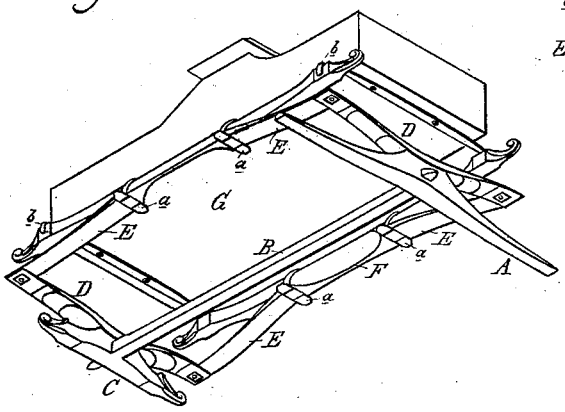


Fig. 2

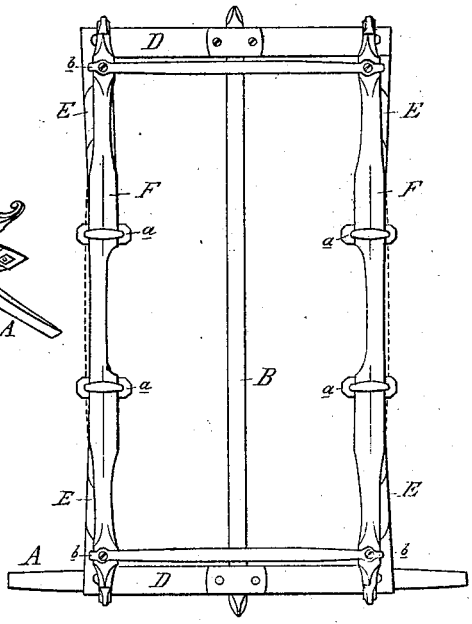


Fig. 3

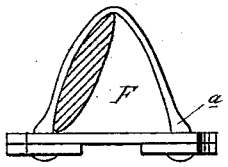
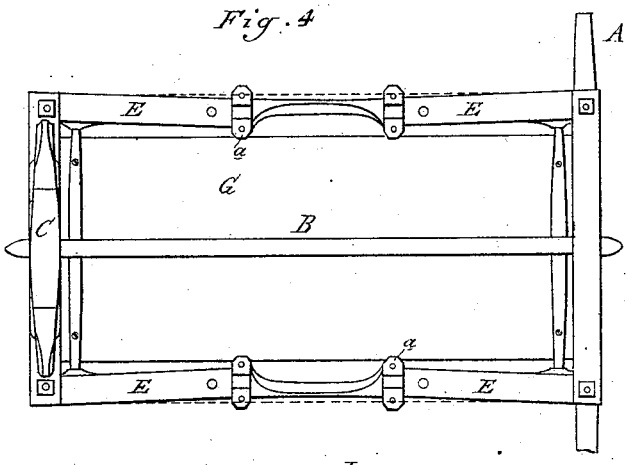


Fig. 4



Attest:

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Inventor:

N. M. Curtis

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UNITED STATES PATENT OFFICE.

HENRY M. CURTIS, OF YPSILANTI, MICHIGAN, ASSIGNOR OF ONE-HALF HIS RIGHT TO FRANK P. BOGARDUS, OF SAME PLACE.

IMPROVEMENT IN SIDE-BAR WAGONS.

Specification forming part of Letters Patent No. **211,499**, dated January 21, 1879; application filed August 17, 1878.

To all whom it may concern:

Be it known that I, HENRY M. CURTIS, of Ypsilanti, Washtenaw county, and State of Michigan, have invented an Improvement in Side-Bar Wagons, of which the following is a specification:

The nature of my invention relates to new and useful improvements in the construction of what are technically known as "side-bar wagons;" and the invention consists in so constructing and combining the springs with the side bars as to transfer the elongation of the former and compensate for the same by the outward and upward spring of the side bars at a point at or near the center of their lengths.

Figure 1 is a perspective view, looking from the bottom. Fig. 2 is a plan view of the top with the body removed, showing the position of the springs and side bars when not under pressure, and in dotted lines the position of the same when under pressure. Fig. 3 is a cross-section through the center of one of the side bars. Fig. 4 is a plan from the bottom.

In the accompanying drawings, which form a part of this specification, A represents the rear axle, B the reach, and C the bolster, all of the usual construction. To the axle and bolster are secured, in the usual manner, the semi-elliptic springs D. To the ends of these springs are rigidly secured, at nearly right angles, the springs E, with overlapping leaves, which, with the free ends of these springs, are secured by the clips *a* to the side bars, F. These latter-named springs do not project front and rear at right angles to the semi-elliptic springs D, although nearly so. Their free ends, when attached to the side bars, are thrown or drawn very slightly inward at their points of intersection with the side bars.

The body G is supported by clips *b* near the extremities or outer ends of the side bars, which latter may be much lighter than those in ordinary use. The side bars are cut away from the inner side between the clips *a*, which secure them to the side springs to allow a sufficient elasticity at that point.

In practice, when a sufficient weight is imposed upon the end or semi-elliptic springs to depress and elongate them, such elongation is carried by the longitudinal springs to the side bars at their points of intersection with those springs, when such extension is compensated for by an outwardly lateral spring of the center of said side bars, the ends thereof being rigidly fastened by the clips to the body.

The extension of the side springs, they being rigidly secured to the semi-elliptic springs, must of necessity be toward their free ends, where they are clipped to the side bars. This extension is compensated for by a slight upward spring of the center of the side bars.

By this method of construction and arrangement all torsion is avoided of any of the springs, and their extensions under pressure compensated for by the outward lateral and upward spring of the side bars near their centers, and between the clips by which they are secured.

What I claim as my invention is—

The combination, with the side bars cut away on their inner sides at the center, of the wagon-body, secured to the ends of the side bars, and the side and end springs, substantially as and for the purpose set forth.

HENRY M. CURTIS.

Witnesses:

FRANK JOSLIN,

C. JOSLIN.