P. F. MILLIGAN & J. F. WOOD.
Side-Spring Vehicle.

No. 202,741. Patented April 23, 1878.

Fig. 2

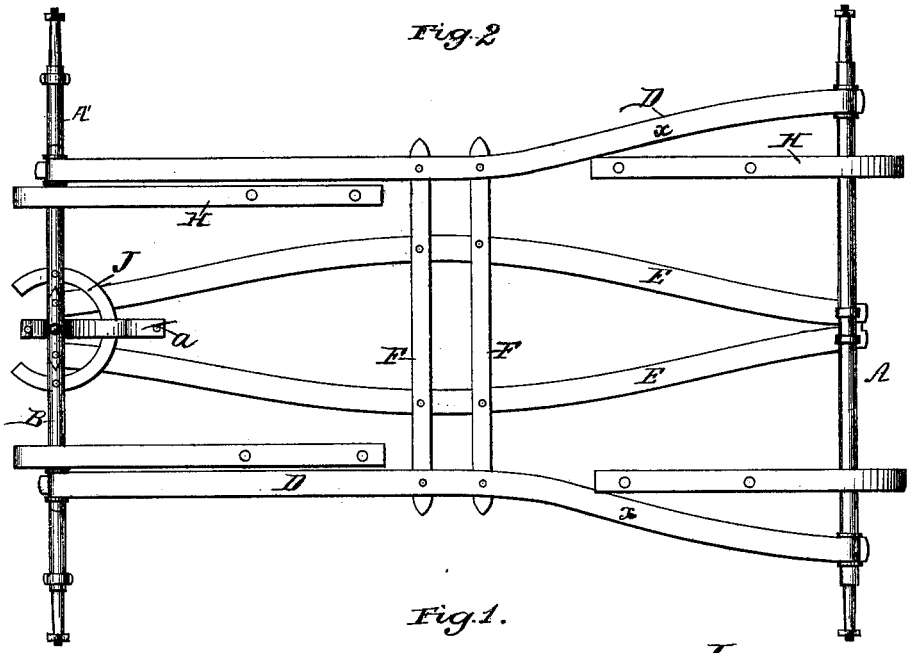


Fig. 1.

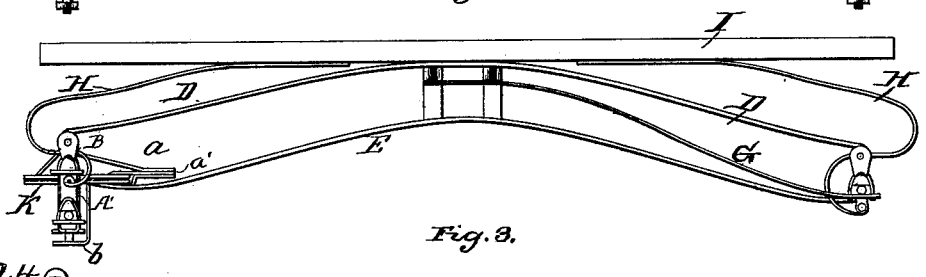
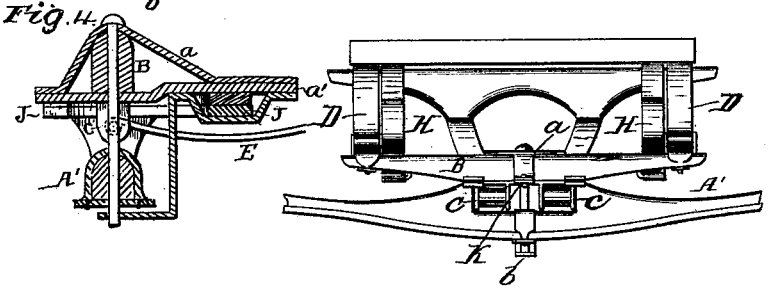


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

PATRICK F. MILLIGAN AND JOHN F. WOOD, OF WASHINGTON, D. C.

IMPROVEMENT IN SIDE-SPRING VEHICLES.

Specification forming part of Letters Patent No. **202,741**, dated April 23, 1878; application filed August 29, 1877.

To all whom it may concern:

Be it known that we, PATRICK F. MILLIGAN and JOHN F. WOOD, both of the city of Washington and District of Columbia, have invented certain new and useful Improvements in Carriage and Wagon Springs, which improvements are hereinafter fully set forth in connection with the accompanying drawing.

This invention relates to that class of road-wagons in which the spring-platform is the means of connecting the two axles; and consists in constructing and arranging the springs so as to prevent side motion, insure action in unison, and afford an elastic support for the body.

The invention further consists in an improvement in the front "union," whereby the release of the axle in case of breaking the king-bolt is prevented.

In the drawing, Figure 1 is a plan view of sufficient of a vehicle to show our invention. Fig. 2 is a side elevation; Fig. 3, a front view; and Fig. 4, a detached sectional view.

A A′ are the axles; B, the bolster; J, the fifth-wheel, and I the body, all constructed in any usual manner.

The front and rear axles are connected by a spring-perch consisting of two semi-elliptic laterally arched or curved springs, E E, hung below the rear axle and to lugs *c c* below the bolster, and between the latter and the front axle, which is cut away on both sides of the king-bolt to admit them.

The fifth-wheel J extends between the springs E and a bar, *a′*, braced by a stay, *a*, extending from the bolster centrally to the rear. By this arrangement, should the king-bolt break, the fifth-wheel will be maintained between the springs E E and bar *a′*, and, sliding forward, will strike the lugs *c c*, which effectually prevent its escape and hold the axle in place.

The spring-platform consists of the spring-perch in connection with semi-elliptic side springs D, pivoted above the bolster and rear axle, above and nearly parallel to the spring-perch, and connected to the latter by braces F F, which, in this case, are of wood, and constitute the cross-bars which support the body I.

The side springs are parallel from the front end to the center of the wagon, so as to permit the wheels to approach the body, but are bent laterally outward from the center, and are connected near the ends of the rear axle, so as to act as braces as well as springs. The bending of the springs, further, gives a torsional action near the points *x*, increasing the elasticity.

It will be seen that the two arched springs E E, connected near the center by the cross-bars F F, form a girder calculated to afford considerable resistance to side thrusts, and possessing much of the lateral rigidity of a rigid perch, while yielding with the rest of the platform under vertical pressure, this being due to the position of the arched springs E E below and between the side springs, and to the bracing of the whole and retention in this position by the cross-bars F F.

In extremely long wagons, or where heavy loads have to be carried, S-springs H may be used at the corners, each spring being jointed below one end of one axle, extending over the latter and back to the body. If desired, additional braces G may be used.

We do not claim the construction of the springs E D, as they may form the subject of separate applications for patents for articles of manufacture; but

We claim—

1. In a spring-perch wagon, the combination, with the side springs D D, of the spring-perch, consisting of two laterally-curved semi-elliptic springs, E E, converging from the center toward the ends, and the cross-bars F F, connected to the body, side springs, and spring-perch, all arranged as specified.

2. The combination, with the body and bolster, of side springs D D, parallel from the front ends to the center, and diverging outward from the center to the rear ends, as and for the purpose set forth.

3. The combination of the bolster, front axle, fifth-wheel, bar *a′*, and lugs *c*, arranged as set forth, to prevent the detaching of the axle on the breaking of the king-bolt, as specified.

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JOHN F. WOOD.

Witnesses:
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H. SCOTT.