2 Sheets—Sheet 1.

# W. MICHAEL.
## Vehicle-Spring.

No. 202,851. Patented April 23, 1878.

Fig. 1.

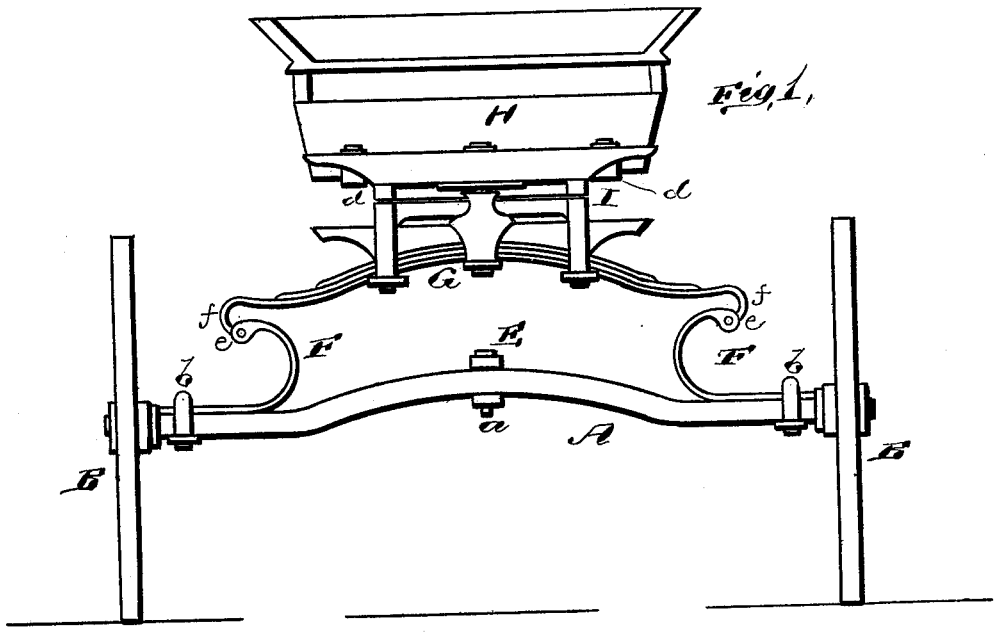
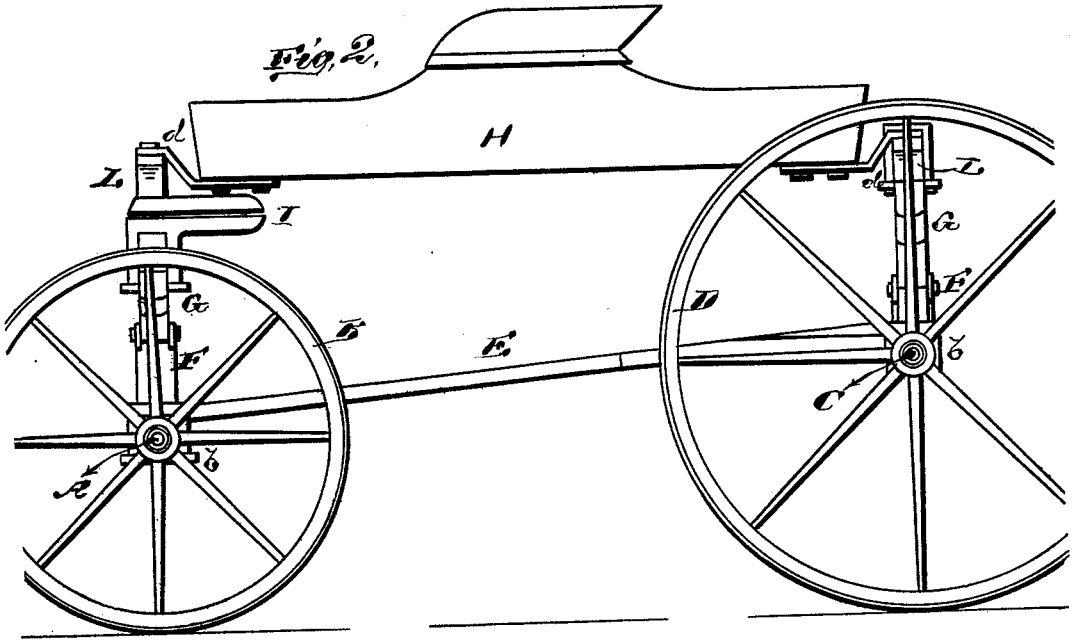



Fig. 2.




WITNESSES
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2 Sheets—Sheet 2.

# W. MICHAEL.
## Vehicle-Spring.

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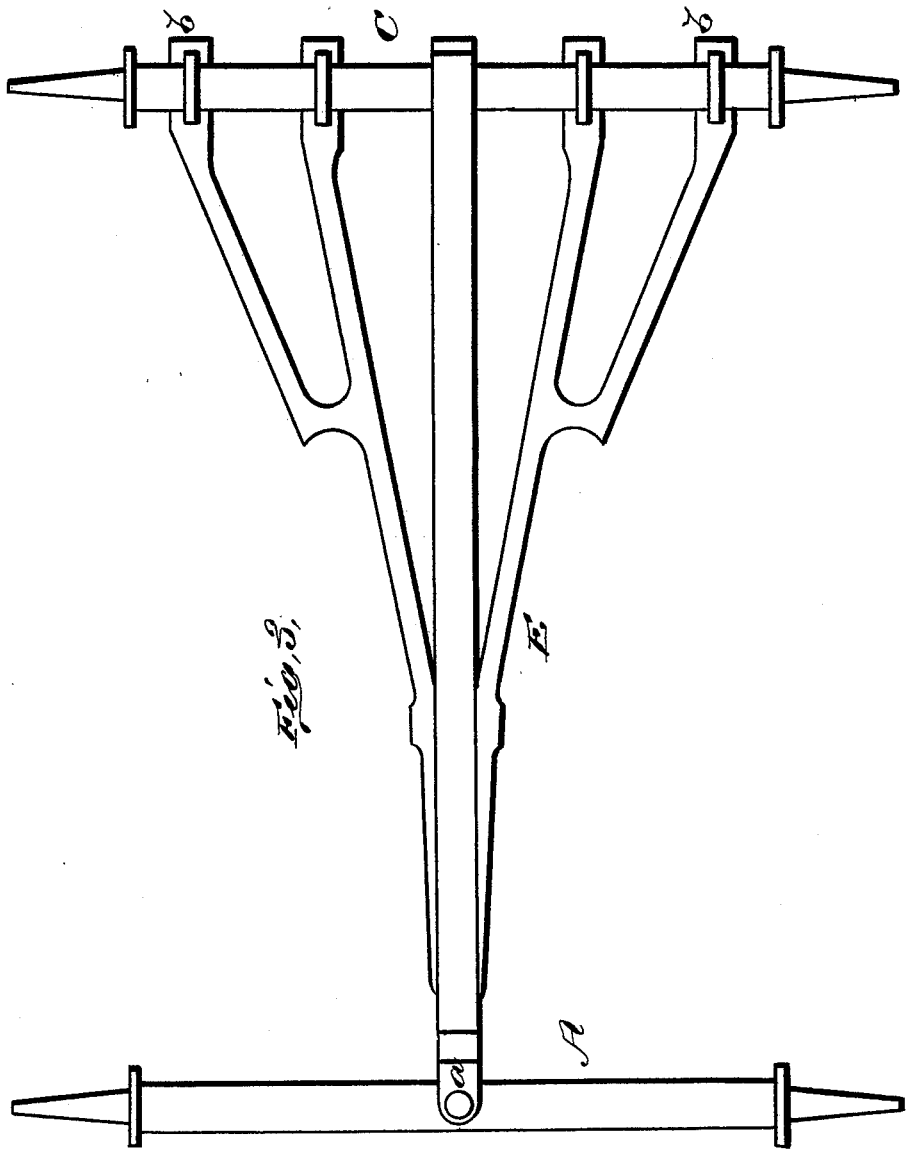


WITNESSES
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# UNITED STATES PATENT OFFICE.

WILLIAM MICHAEL, OF HARRISON CITY, PENNSYLVANIA.

## IMPROVEMENT IN VEHICLE-SPRINGS.

Specification forming part of Letters Patent No. **202,851**, dated April 23, 1878; application filed March 16, 1878.

*To all whom it may concern:*

Be it known that I, WILLIAM MICHAEL, of Harrison City, in the county of Westmoreland and State of Pennsylvania, have invented a new and valuable Improvement in Wagon-Gear; 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 a rear view of a wagon having my wagon-gear. Fig. 2 is a side view, and Fig. 3 is a plan view, of my wagon-gear.

This invention relates to that class of vehicles supported upon semi-elliptical springs pivoted to C-shaped end springs, which are secured upon the axles; and my improvement consists in the peculiar construction of the C-shaped and the semi-elliptical springs and their connecting devices, as will be hereinafter more fully set forth, and pointed out in the claim.

The annexed drawing, to which reference is made, fully illustrates my invention.

A represents the front axle, with wheels B B, and C is the rear axle, with wheels D D. E is the perch, having both ends forked and straddling the axles, the front end having the front axle A pivoted in it by a bolt, *a*, while the rear end of the perch is rigidly fastened to the hind axle C. Side braces E also connect the hind axle with the perch in any suitable manner.

On top of each axle A and C, and at each end thereof, is laid what I call the "C-shaped spring F," curved inward and outward, as shown in Fig. 1, and provided with the lugs *e*, to receive the coupling-pins, and the lower arm thereof extending outwardly, and firmly secured to the axle by means of clips *b*.

To the lugs *e* of the C-shaped springs F are connected the semi-elliptical springs G. These springs G, at their outer ends, are curved inward, and fit between the lugs *e* of the C-shaped spring, and fastened thereto by coupling-pins *f*, thereby completing the spring, and making the same in three parts. By this construction the upper curve of the C-shaped spring serves as a stay or check for the semi-elliptical spring G in its upward movement, and not only prevents bending or breaking of such elliptical springs, but also obviates the necessity of stay-straps for the body of the carriage. By means of these springs F F the weight of the body is transferred from the center of each axle, as is usual in this class of vehicles, to the ends thereof near the hubs of the wheels.

It is well known that this is a great advantage, and I accomplish the result in a very simple and effective manner by the interposition of the peculiar-shaped springs F F, as described.

On top of the front spring I place the fifth-wheel I, between it and the body, dispensing with the head-block on the front axle.

I have shown the body H as connected by arms *d d* with bed-pieces L L on the rear spring and the fifth-wheel; but it is evident that the body may be connected and supported in any suitable and convenient manner without departing from the spirit of my invention.

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

In that class of vehicles in which the body is supported on a combination of semi-elliptical and C-shaped springs, the semi-elliptical spring G, curved inward at its ends and pivoted within the heads of the C-shaped end spring F, the latter being curved inward, as shown, from their heads, and secured to the axle in such manner that the combined springs shall have both an outward and downward movement when weight is applied, substantially as described.

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

WILLIAM MICHAEL.

Witnesses:

I. KLINGENSMITH,

W. J. MILLER.