G. W. WARREN.
SIDE-SPAR VEHICLES.

No. 194,748. Patented Aug. 28, 1877.

Fig. 1.

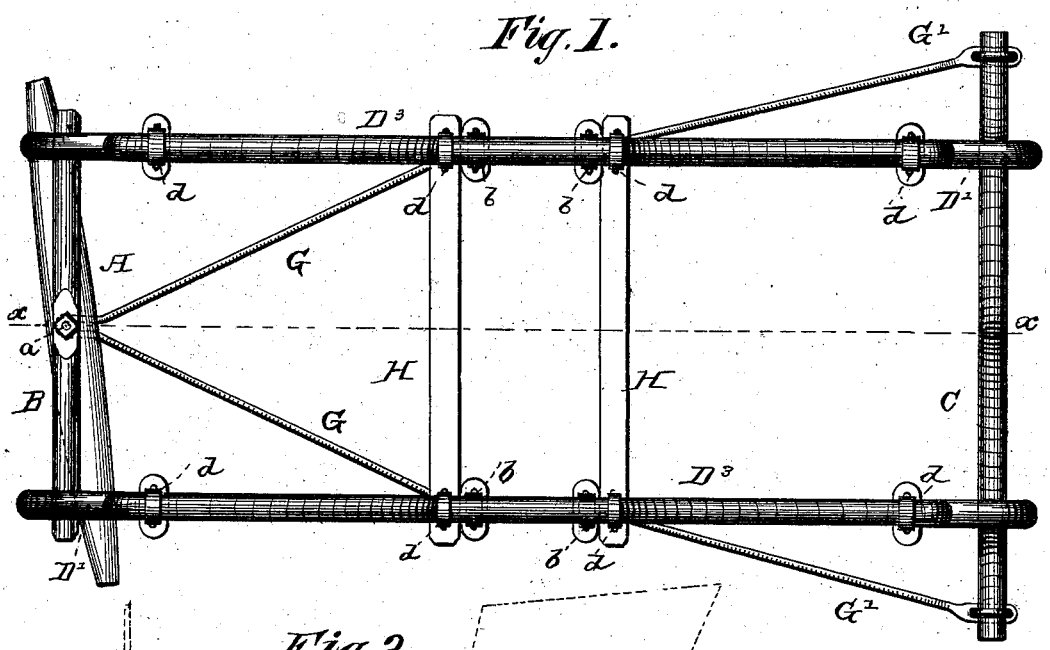
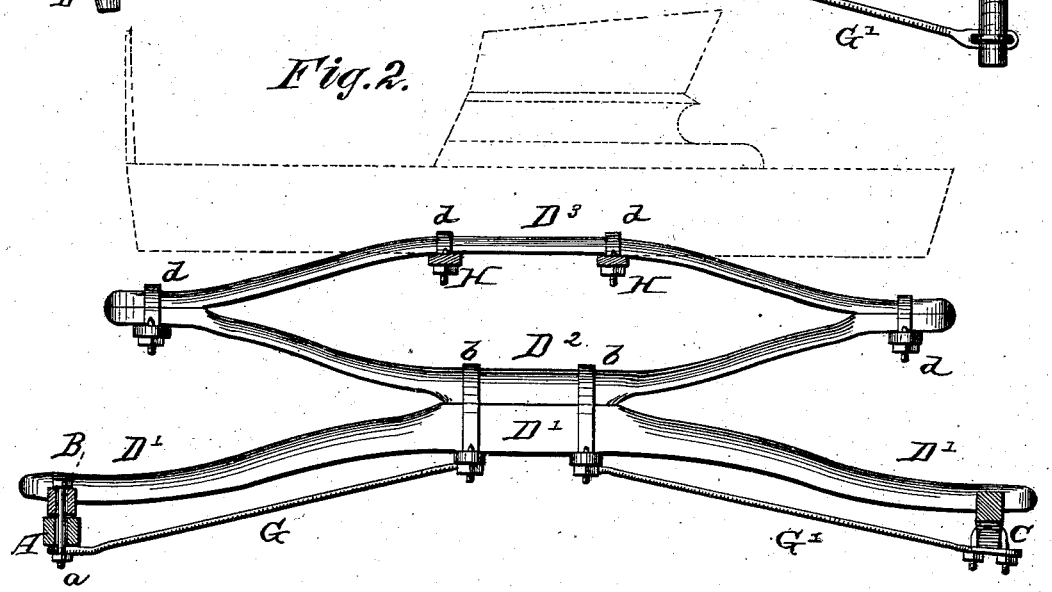



Fig. 2.




Witnesses:
P. C. Dieterich.
Frank H. Duffy

Inventor:
Geo. W. Warren
Per C. H. Watson & Co. Attorneys.

# UNITED STATES PATENT OFFICE.

GEORGE W. WARREN, OF BRISTOL, INDIANA.

## IMPROVEMENT IN SIDE-SPAR VEHICLES.

Specification forming part of Letters Patent No. **194,748**, dated August 28, 1877; application filed May 9, 1877.

*To all whom it may concern:*

Be it known that I, GEO. W. WARREN, of Bristol, in the county of Elkhardt and State of Indiana, have invented certain new and useful Improvements in Spring-Beds for Vehicles; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The nature of my invention consists in the construction and arrangement of a spring-bed for buggies and other vehicles, as will be hereinafter more fully set forth.

In the annexed drawing, which fully illustrates my invention, Figure 1 is a plan view, and Fig. 2 is a central vertical section on line *x x*, Fig. 1.

A represents the front axle, with head-block B, united by the king-bolt *a* in the usual manner. C is the rear axle. On each side of the bed is a spring-bar, $D^1$, resting upon the hind axle C and front bolster or head-block B, and in the center, on top of said spring-bar $D^1$, is, by suitable clips *b b*, attached a second spring-bar, $D^2$, curved upward at its ends. To the ends of the spring-bar $D^2$, on top, is fastened a third spring-bar, $D^3$, by means of clips *d d*, the whole forming a combination-spring, the different parts of which divide the weight and render it capable of sustaining any ordinary weight placed upon them.

G G are braces, extending from the king-bolt *a* to the centers of the lower bars $D^1$, and other braces, G′, extend from the centers of said lower bars to the hind axle C, near the hubs of the wheels thereon.

The buggy-body rests on the bars H H, inside of the upper springs $D^3$, said bars connecting the two top springs, as shown.

By this construction of the spring-bed the pressure is divided and an easy motion obtained. It has a fulcrum-bearing, when loaded, upon the connections, which adds greatly to the strength of the springs. It does away with the common reach, is much lighter and cheaper than the common buggy, and equally durable. The great length of the combined springs renders the motion more easy.

The three spring-bars $D^1$ $D^2$ $D^3$ may be combined in other ways—for instance, by crossing the two bars $D^1$ $D^2$, pivoting them together at *x*, and having their lower ends resting, respectively, on the front head-block and hind axle, with the top bar $D^3$ secured to the upper ends of the two bars $D^1$ $D^2$.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with the front head-block B and hind axle C, of the three spring-bars, $D^1$, $D^2$, and $D^3$, arranged and connected together substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

GEO. W. WARREN.

Witnesses:

GEORGE M. COLBURN,

C. H. WILKINSON.