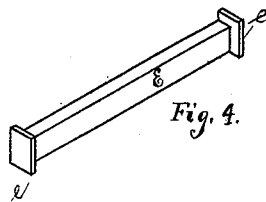
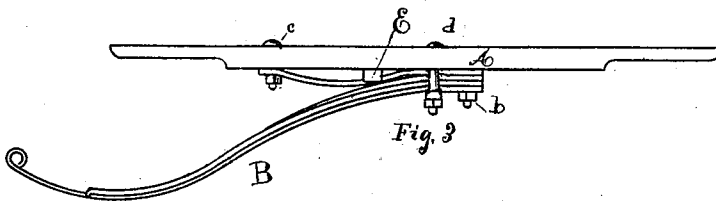
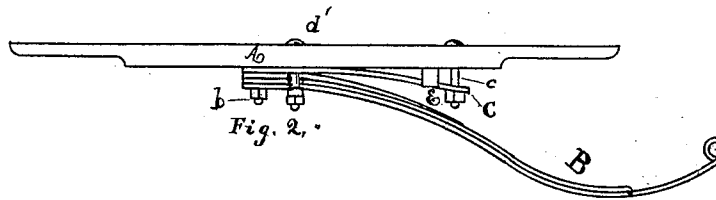
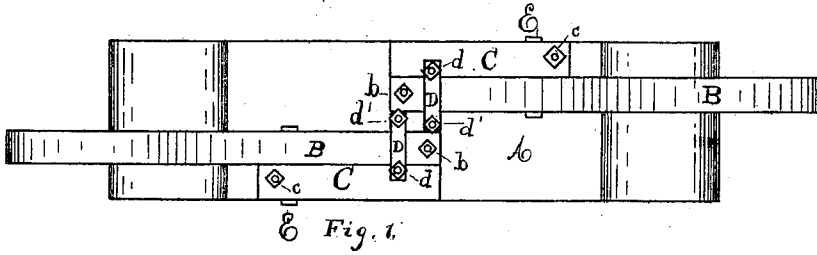


(No Model.)

A. ARMSTRONG.
VEHICLE SPRING.

No. 366,754.

Patented July 19, 1887.



Witnesses

Wm. Army
Mary E. Murray

Inventor

Albert Armstrong

By his Attorney Geo. Murray

UNITED STATES PATENT OFFICE.

ALBERT ARMSTRONG, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO
ROBERT F. STEWART, OF SAME PLACE.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 366,754, dated July 19, 1887.

Application filed December 13, 1886. Serial No. 221,365. (No model.)

To all whom it may concern:

Be it known that I, ALBERT ARMSTRONG, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Vehicle-Springs, of which the following is a specification.

My invention is especially designed for use upon buggies and light spring-wagons. Its object is a cheap durable spring that may be easily adjusted as to length and elasticity so as to adapt it to vehicles of various widths, and also to suit the taste of the user or the load to be carried.

The invention will be first fully described in connection with the accompanying drawings, and then particularly referred to and pointed out in the claims.

In the accompanying drawings, in which like parts are represented by identical reference-letters wherever they occur throughout the various views, Figure 1 is an inverted plan view of a truss-bar or cross-bearing of a vehicle-body having my springs attached. Fig. 2 is an edge elevation of the same with one of the sectional springs removed and the other shown with the movable bar so adjusted as to insure the greatest elasticity. Fig. 3 is a similar view with the opposite spring attached, and the bar so placed as to greatly lessen the elasticity of the spring; and Fig. 4 is an enlarged perspective view of the bar for regulating the elasticity of the spring.

Referring to the parts, A is the customary truss-bar, to which sectional springs are secured and upon which the body of the vehicle is supported, the ends of the bar being secured to the side sills of the body. The curved springs B, which may be composed of any desired number of leaves, are secured at their inner ends to the inner ends of the spring-steel plates C by bolts *b*. The opposite ends of the plates are secured to the truss-bar A by bolts *c*. The springs are clipped to the plates C and to the truss-bar A by clip-ties D and bolts *d d'*, the bolts *d* passing loosely through the plates C. The bolts *d'* pass only through truss-bar A and the ties D. The ties D are slightly rounded on the side next the springs, forming fulcrums for the springs.

The ends of the springs are turned into eyes or loops to receive the shackles which secure them to the side bar. The bars E, Fig. 4, 55 which are preferably of metal and have flanges *e* at each end to prevent their displacement, are placed between the plates C and the truss-bar A, either nearer to or farther from the vertical center of the bar A, depending upon the elasticity required. If it is desirable that the springs have great elasticity, the bars E are placed near the outer ends of the plate C, as in Fig. 2. If less elasticity be required, the bars are nearer to the center or opposite ends of the plates, as in Fig. 3. The adjusting devices are moved to any position required by simply loosening the bolts *c d d'*, and after they are properly adjusted tightening the bolts.

Carriage-makers have considerable difficulty in suiting customers with the elasticity of the spring. By the means above described the springs may be made to suit any taste, and if from use the springs should settle or give down, or the body should not hang in the right position, the defects can be remedied with but little labor or trouble.

While I regard the quality of adjustability attained by the use of the movable bars E as very desirable, it is obvious that if these bars were omitted the device without them would still be a very cheap and efficient one.

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

1. In a vehicle-spring, the combination, 85 substantially as specified, of the truss-bar A, the spring-plates C, and clips D, the outer ends of the spring-plates being secured to the truss-bar and the inner ends of the springs being secured to the inner ends of the spring-plates near the center of the truss-bar, said springs and plates being clipped to the truss-bar by clips D, substantially as specified.

2. The combination, substantially as hereinbefore set forth, of the springs B, the truss-bar A, and spring-plates C, connected together as described, with the movable bar E, adjustable between the spring-plates and the truss-bar, for the purpose of regulating the elasticity of the springs.

ALBERT ARMSTRONG.

Witnesses:

GEO. J. MURRAY,
ROBERT F. STEWART.