

H. A. HIGHT, Sr.  
Vehicle Springs.

No. 151,876.

Patented June 9, 1874.

Fig. 1.

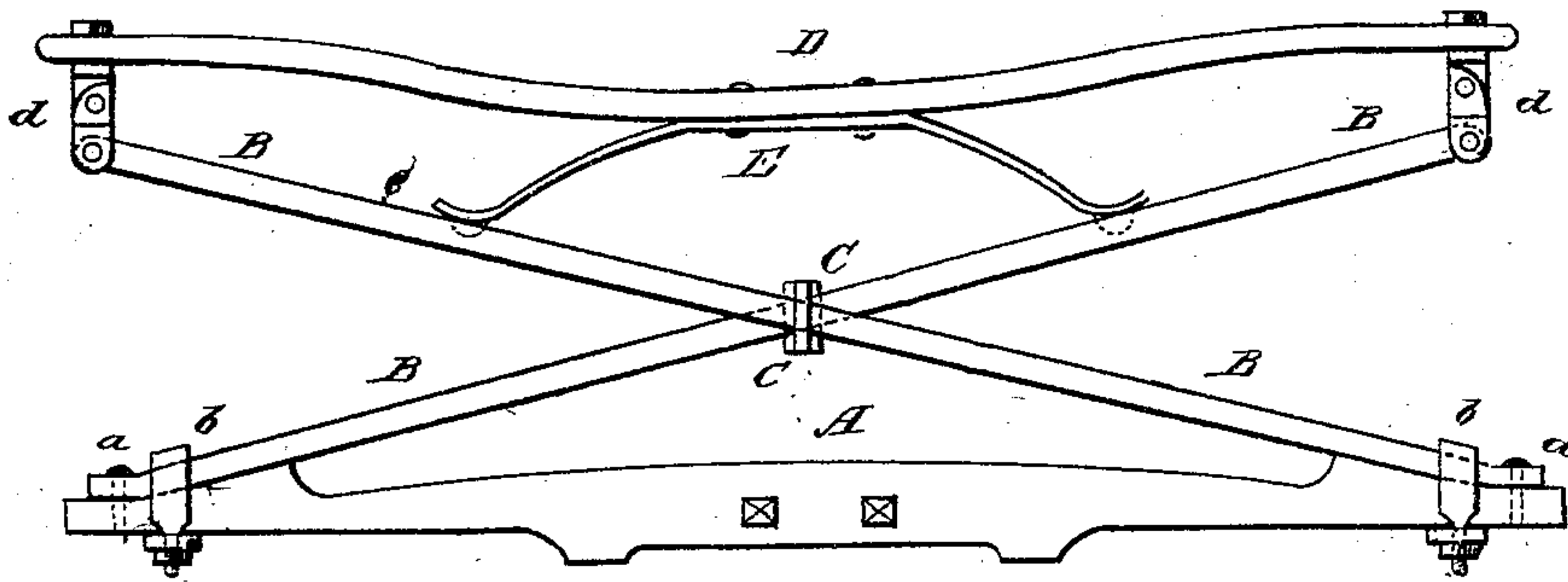


Fig. 2.

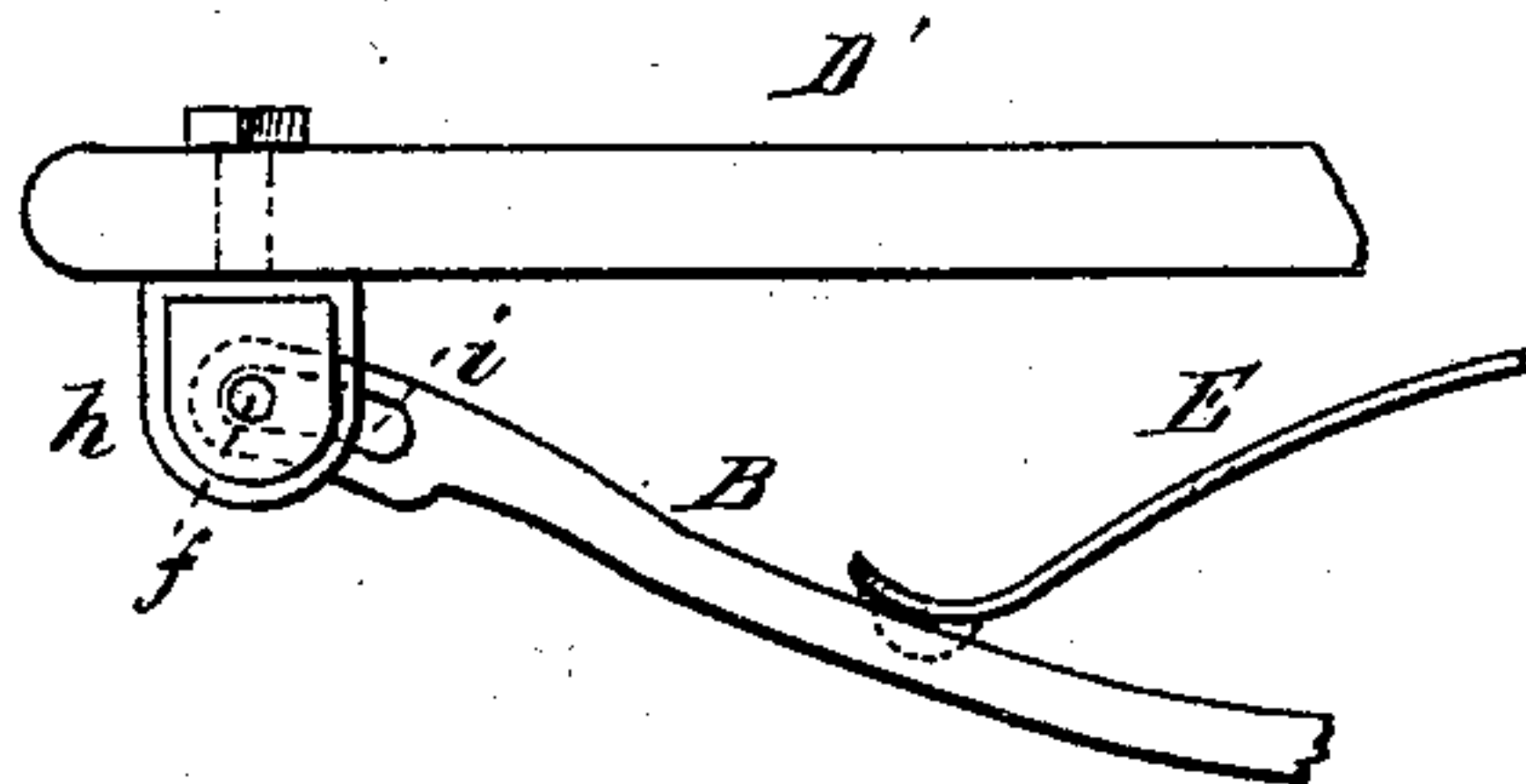


Fig. 3.

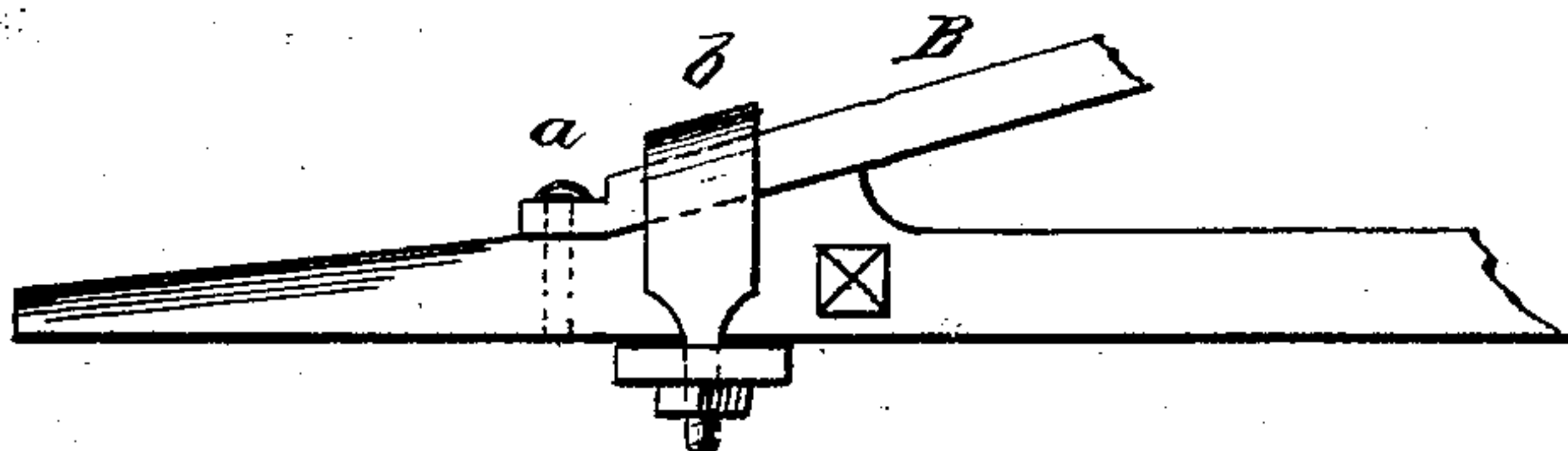
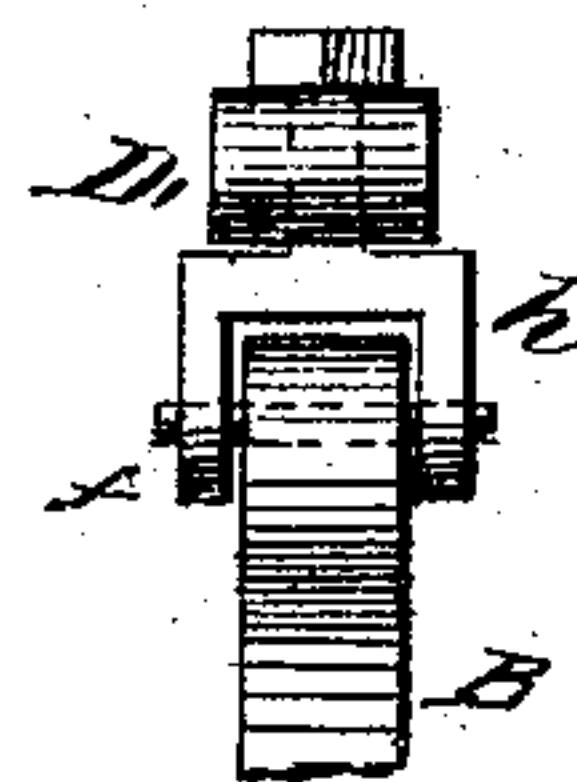


Fig. 4.

Fig. 6.

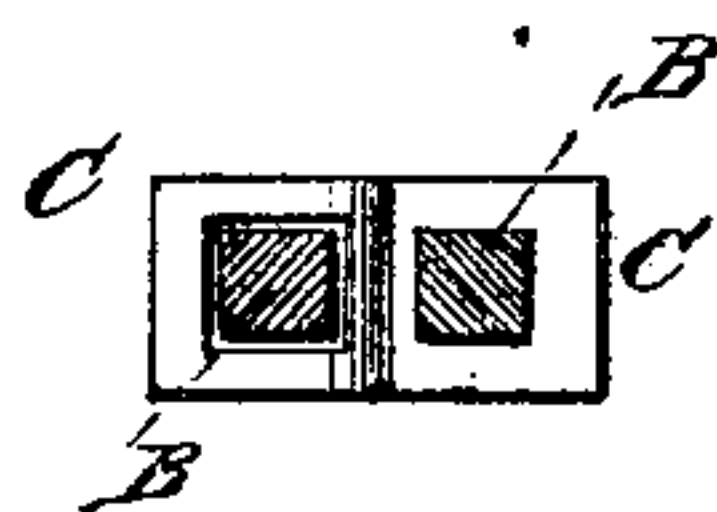


Fig. 5.

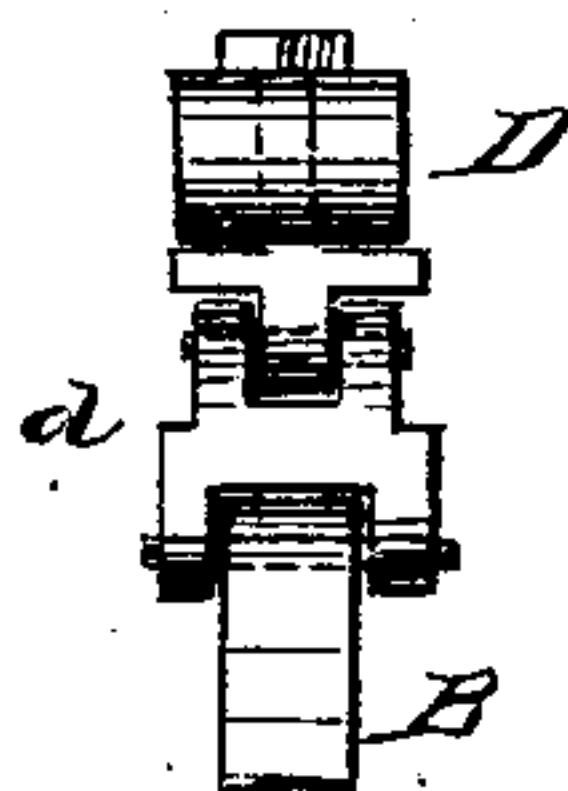
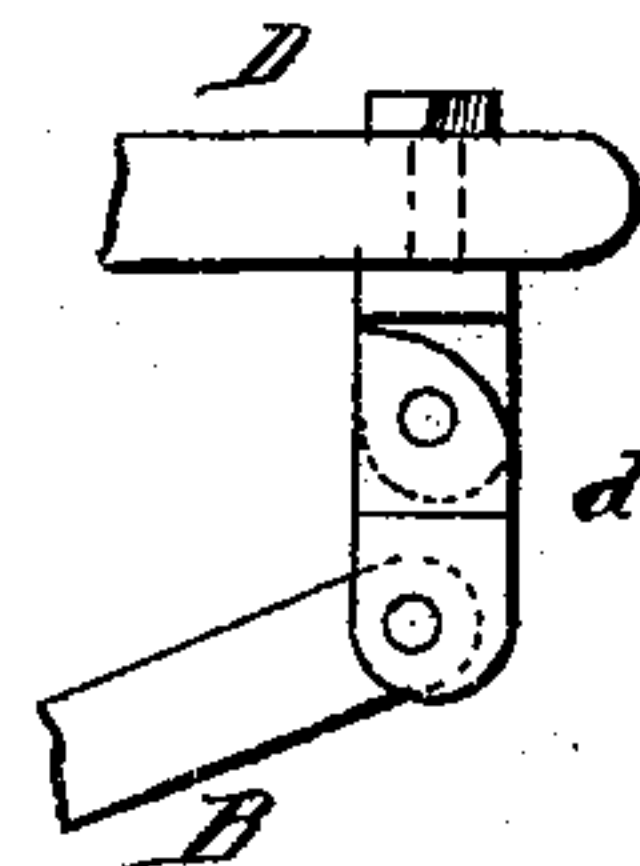
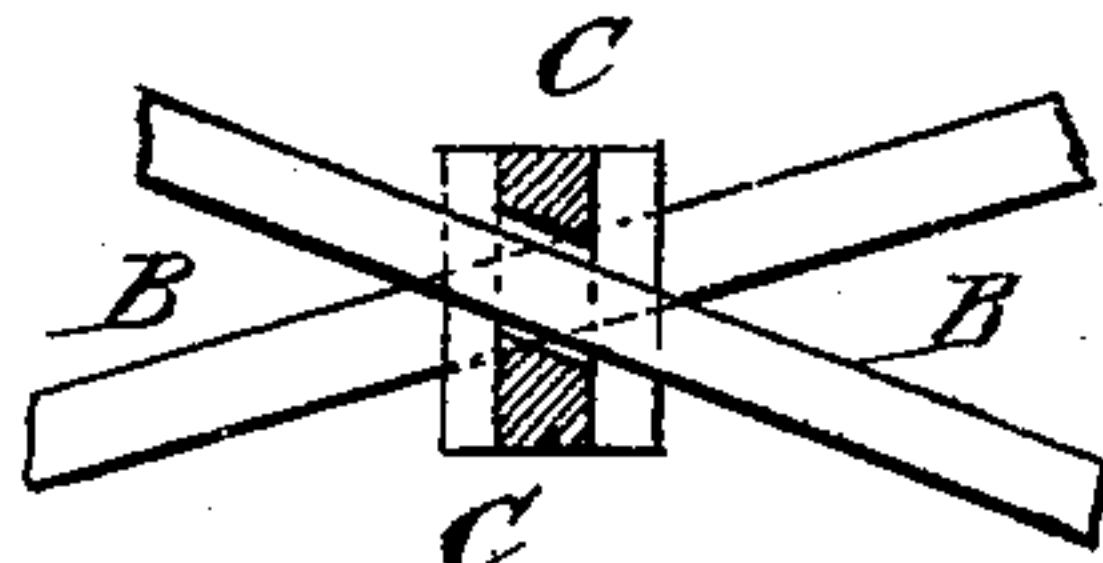


Fig. 7.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

HENRY A. HIGHT, SR., OF FORT WAYNE, INDIANA.

## IMPROVEMENT IN VEHICLE-SPRINGS.

Specification forming part of Letters Patent No. **151,876**, dated June 9, 1874; application filed April 15, 1874.

*To all whom it may concern:*

Be it known that I, H. A. HIGHT, Sr., of Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Carriage-Springs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The nature of my invention consists in the construction and arrangement of an equalizing carriage-spring, formed or composed of equalizing spring bars or plates, or series of plates, and coupling, as will be hereinafter more fully set forth.

In the accompanying drawing, Figure 1 is an end view of front bolster; Fig. 2, portion of end view of rear axle; Fig. 3, side view of upper part of same; Figs. 4 and 5, enlarged end and side view of shackle *d*; Figs. 6 and 7, enlarged views of coupling C.

A represents the front bolster of a vehicle, on the top of which, near each end, is secured a spring-bar, B, by means of a bolt, *a*, and clip *b*, or any other suitable means. The spring-bars B cross each other in the center, and are connected by a coupling, C, which consists simply of a double loop, one being firmly secured to one of the spring-bars, and the other bar passing through the other loop. The upper end of each spring-bar is connected with the front spring-block D of the vehicle by means of a double-jointed shackle, *d*, or male and female coupling, to accommodate the expansion of the equalizing spring-bars. To the under side of the block or bar D is secured a half-elliptic spring, E, formed

of one or more steel plates, the ends of which bear against the upper sides of the upper portions of the spring-bars B, as shown. To the rear axle are secured similar spring-bars, coupled together in the same manner, and also to the back axle-bed D', which has a similar semi-elliptic spring. The coupling of the spring-bars with the back axle-bed D' is formed by means of a box-clip, *h*, attached to the bed D'; and the upper end of the spring-bar has an oblong slot, *i*. A pin, *f*, passes through the clip *h* and the slot *i*, thus coupling them together, and allows for the expansion of the equalizing spring-bars.

This device may be applied to a carriage or vehicle of any description; and, also, to any other work, or for any other purpose, where an easy and gentle elastic motion is desired.

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

1. The combination, with the axle or bolster, of the spring-bars B B, coupling C, and double-jointed shackles *d d*, substantially as and for the purposes set forth.

2. The box-clips *h*, in combination with the slotted spring-bars B and pins *f*, as and for the purposes set forth.

3. The semi-elliptic spring E, in combination with the spring-bars B, substantially as set forth.

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

HENRY A. HIGHT, SR.

Witnesses:

OBADIAH J. KOVER,  
JOHN O. ROBBINS.