

S. W. LUDLOW.
 Vehicle Spring and Axle.

No. 204,589.

Patented June 4, 1878.

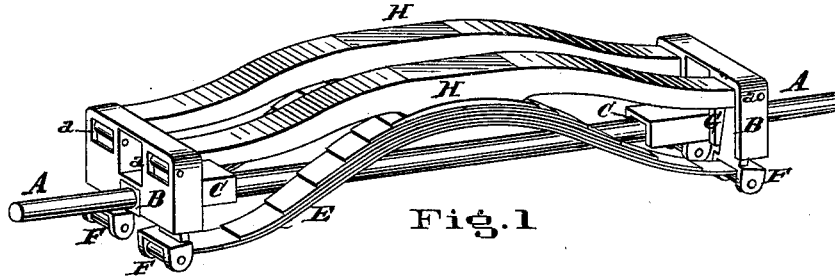


Fig. 1

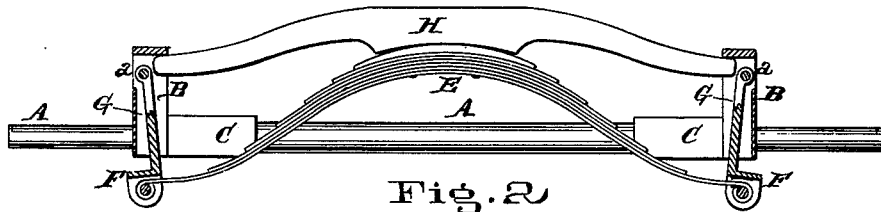


Fig. 2

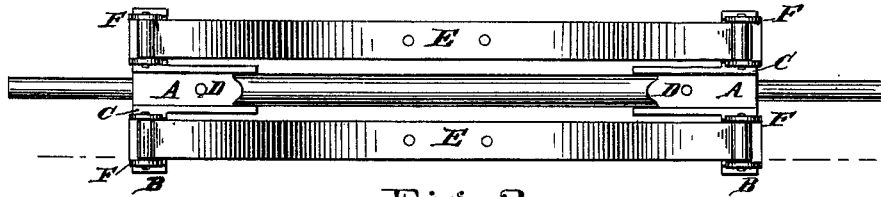


Fig. 3

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UNITED STATES PATENT OFFICE.

SAMUEL W. LUDLOW, OF CINCINNATI, OHIO.

IMPROVEMENT IN VEHICLE SPRING AND AXLE.

Specification forming part of Letters Patent No. **204,589**, dated June 4, 1878; application filed April 5, 1878.

To all whom it may concern:

Be it known that I, SAMUEL W. LUDLOW, of Cincinnati, Hamilton county, and State of Ohio, have invented an Improvement in Vehicle Spring and Axle, of which the following is a specification:

The object of this invention is to improve upon the vehicle spring and axle described in my United States Letters Patent No. 191,536, to the end that a straight axle can be used instead of the bent axle described in my said Letters Patent.

My improvement consists in the employment of two springs arranged on opposite sides of the axle, and combined with fixed guides and guide-bars. In this way the results aimed at by my patented spring are accomplished in a better manner and with a straight axle.

Figure 1 is a perspective view of my improvement. Fig. 2 is a longitudinal section. Fig. 3 is a plan from the under side.

A is the axle, to which are attached, at each end, boxes B. I prefer to attach the axle to these boxes by making sockets C, open at the bottom to receive the axle, which is square at that point, and securing the same by clip, rivet, or bolt D.

Springs E are arranged, one on each side of the axle, as shown, coupled to the boxes by links F, which are pivoted to the boxes, as shown at *a*, and swing each in a separate recess, G, in the boxes.

To each spring is attached a guide-bar, H, whose ends move in guides or ways, to preserve them in a vertical path and prevent lat-

eral play of the springs, and these guide-bars must prevent lateral play of the springs. These guides or ways are shown to be in the drawing the same recesses in which the links F play, and I prefer this construction for simplicity; but it is evident that the ends of the guide-bars may move upon any guiding device.

The links F may, as indicated in my former patent, be omitted by the use of highly flexible and peculiarly curved springs; but I much prefer their use in the carrying out of my present improvement.

The special arrangement of the parts shown gives great firmness of structure and secures a straight axle, the guide-bars and springs being arranged on each side of the axle equally, to secure balanced action and steadiness of motion.

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

The combination, substantially as specified, of the solid straight axle, the duplex guide-boxes, rigidly secured to the axle near the respective journals thereof, the pair of springs, the links suspended in the guide-boxes to connect the ends of the springs thereto, and the guide-bars H.

In testimony of which invention I hereunto set my hand.

SAMUEL W. LUDLOW.

Witnesses:

JOHN E. JONES,
SAMUEL HUMPHREYS.