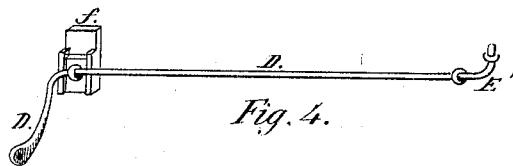
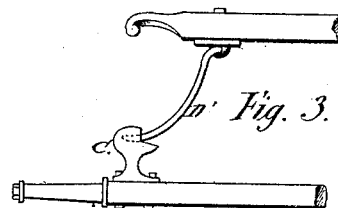
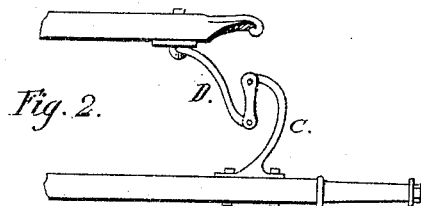
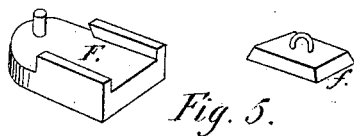
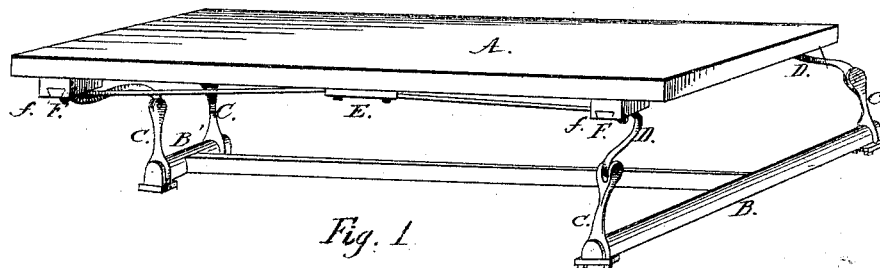


HERSHEY & DUDLEY.

Wagon Spring.

No. 112,037.

Patented Feb. 21, 1871.



Witnesses;
Edwin James
Alfred Holmead

Inventor;
Benjamin Hershey & Richard Dudley.
per J. P. Holmead
Attorney.

UNITED STATES PATENT OFFICE.

BENJAMIN HERSHEY AND RICHARD DUDLEY, OF ERIE, PENNSYLVANIA.

IMPROVEMENT IN SPRINGS FOR VEHICLES.

Specification forming part of Letters Patent No. **112,037**, dated February 21, 1871.

To all whom it may concern:

Be it known that we, BENJAMIN HERSHEY and RICHARD DUDLEY, both of Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Springs for Vehicles; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, making part of this specification, in which—

Figure 1 is a perspective view, showing our improved spring as applied to a vehicle. Figs. 2 and 3 show modifications of the attachment of the lateral arms of the springs and the standards which connect with the vehicle. Fig. 4 is the spring-rod and friction-plate detached from the vehicle. Fig. 5 is an enlarged view of the friction-slide and its cup or flanged seat.

The object of our invention is to furnish for wagons and other vehicles a spring that shall be cheap and simple in its construction, and durable and reliable in use.

Our improvement relates to that class of springs known as the "torsion," and whose effective working depends entirely on the elasticity of the steel rods or bars of which they are constructed, and their adaptability to sustain the twisting and wrenching necessary to their successful operation.

Our invention consists in securing on a suitable base or platform the rods or bars that constitute the spring. These consist of a long horizontal arm, terminating at one end in a lateral arm, and at the other in a short right-angled shoulder. The arms thus formed are secured in two sets of bearings, the one stationary and the other movable. In the stationary bearing the shoulder is securely and rigidly keyed, while in the other, and which is at or near the elbow formed by the lateral arm, the rod is attached in such manner on a sliding friction-plate that its partial revolution is freely allowed when the spring is depressed or twisted by the slight longitudinal movement or play of the slide. This sliding friction-plate rests and works in a cup or flanged seat permanently attached to the platform or base on which the spring is secured.

To the inner ends of these lateral arms are

attached the vertical standards which connect the springs with the running-gear of the vehicle. Thus the springs are acted on by a direct vertical pressure, by which, through the sliding friction-plates, they are readily enabled to accommodate themselves to the pressure twisting the rods, and the natural elasticity of the metal untwisting them in the very degree the pressure is lessened, and returning them to their normal position so soon as it is entirely removed.

To enable others skilled in the art to make and use our invention, we will now proceed to describe its construction and operation.

A is the platform or base on which the entire mechanism of the spring is secured. This may be an independent board, or the floor of the wagon-body or other vehicle, which may be properly strengthened and used for the purpose. B is the bed-piece that rests on the rear axle, and B' the ordinary head-block of a wagon. To these, or equivalent cross-bars or supports, the springs D D are attached by the vertical standards C C.

D D are the springs, and consist of a suitably-tempered steel rod, and are of the form shown in Fig. 4, consisting of a long horizontal arm, terminating in a shoulder, E', at one end, and a lateral arm, D', at the other. E E are bearing-plates, secured at the center of the platform A, and on which the shoulders E' of the rods D are securely and rigidly keyed by staples or equivalent device. F F are cup or flanged seats, in which the sliding plates *ff* work. The flanged walls of this cup-seat F F are inclined, as shown in Fig. 5, as are also the sides of the slide. This prevents the slide falling out of its seat or otherwise becoming detached therefrom. These seats or cups F F are secured on the platform in such relative position to the bearing-plates E E that the staple on the slide *f* shall encircle the rod D at or near the elbow formed by the lateral arm D', as clearly shown in Fig. 4.

The eye at the end of the lateral arm D' may be bolted in the forked head of the standard C, as shown in Fig. 1, or connected thereto by a link, as shown in Fig. 2, or inserted in a shoe, as shown in Fig. 3.

We have shown the spring as consisting of

independent rods. Instead of this, however, two long ogee or S shaped rods may be used, the ends of each rod resting on the friction slide-plates, which are diagonally opposite.

The operation is as follows: The spring is attached to the vehicle, and is in position shown in Fig. 1. Weight is placed or pressure applied on the platform, and is, owing to the connection between the lateral arms D' and standards C C, received and supported on a vertical line. This twists or wrenches the rod D, causing it to make a partial revolution, which it is readily enabled to do by the yielding and traveling in an outward direction of the sliding friction-plate *f*. So soon as the pressure is removed the elasticity of the rod untwists the same, and the plate *f* is returned, the check-pin or stump *f'* preventing its being carried beyond a given point.

Having thus fully described our invention, what we claim therein as new, and desire to se-

cure by Letters Patent of the United States, is—

1. The horizontal rod D, when the same is secured in a transversely-sliding friction-plate in such manner as to allow of the necessary revolution of the rod to form a torsion-spring, substantially as described, as and for the purpose specified.

2. The rods D D, having lateral arms D' D', friction-plates *f f*, and standards C C, when the same are so combined and arranged as to operate substantially as described.

RICHARD DUDLEY.

BENJAMIN HERSHEY.

Witnesses to Benj. Hershey's signature:

I. W. WETMORE,
S. S. SPENCER.

Witnesses as to R. Dudley's signature:

J. E. F. HOLMEAD,
J. T. K. PLANT.