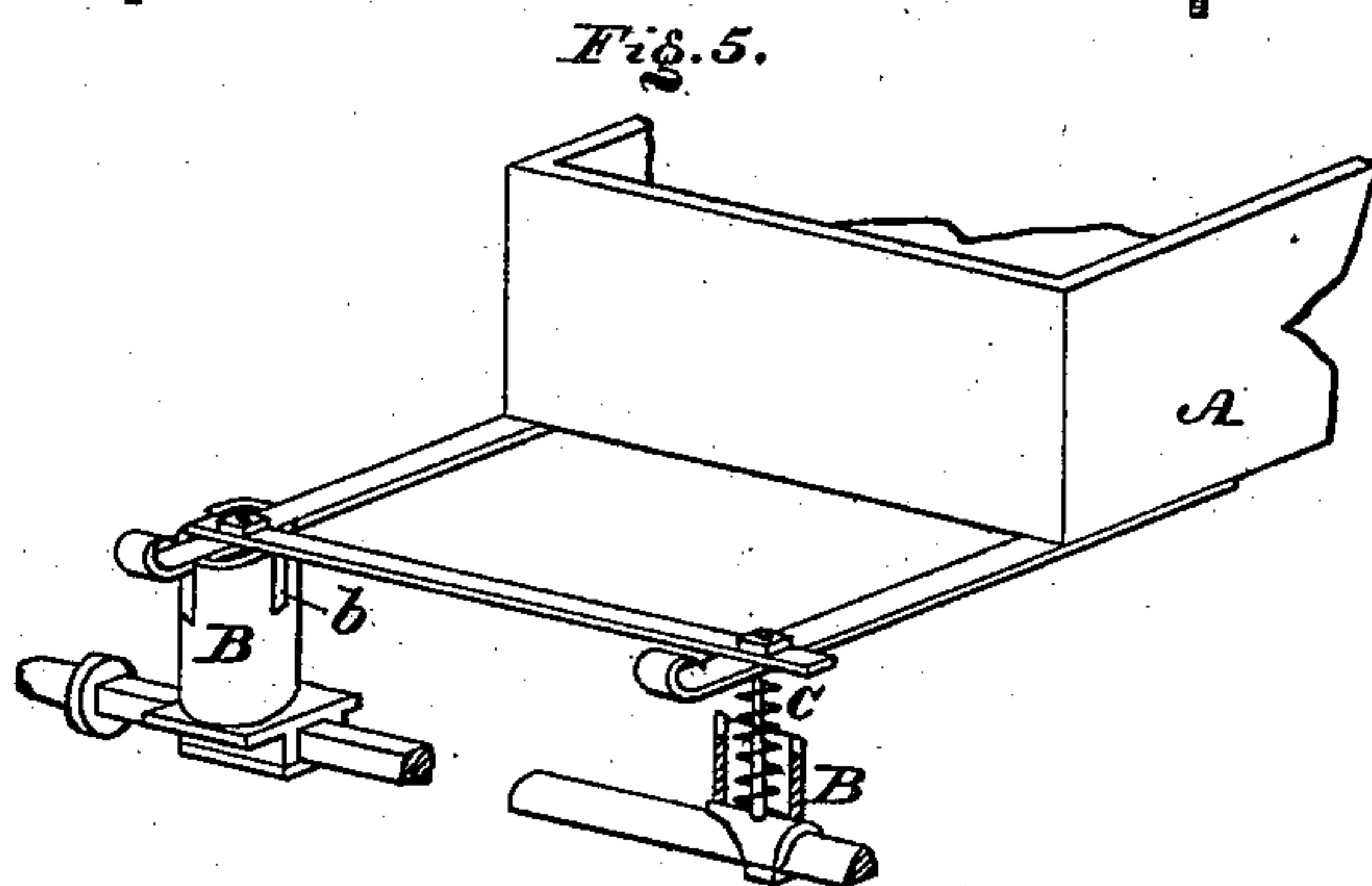
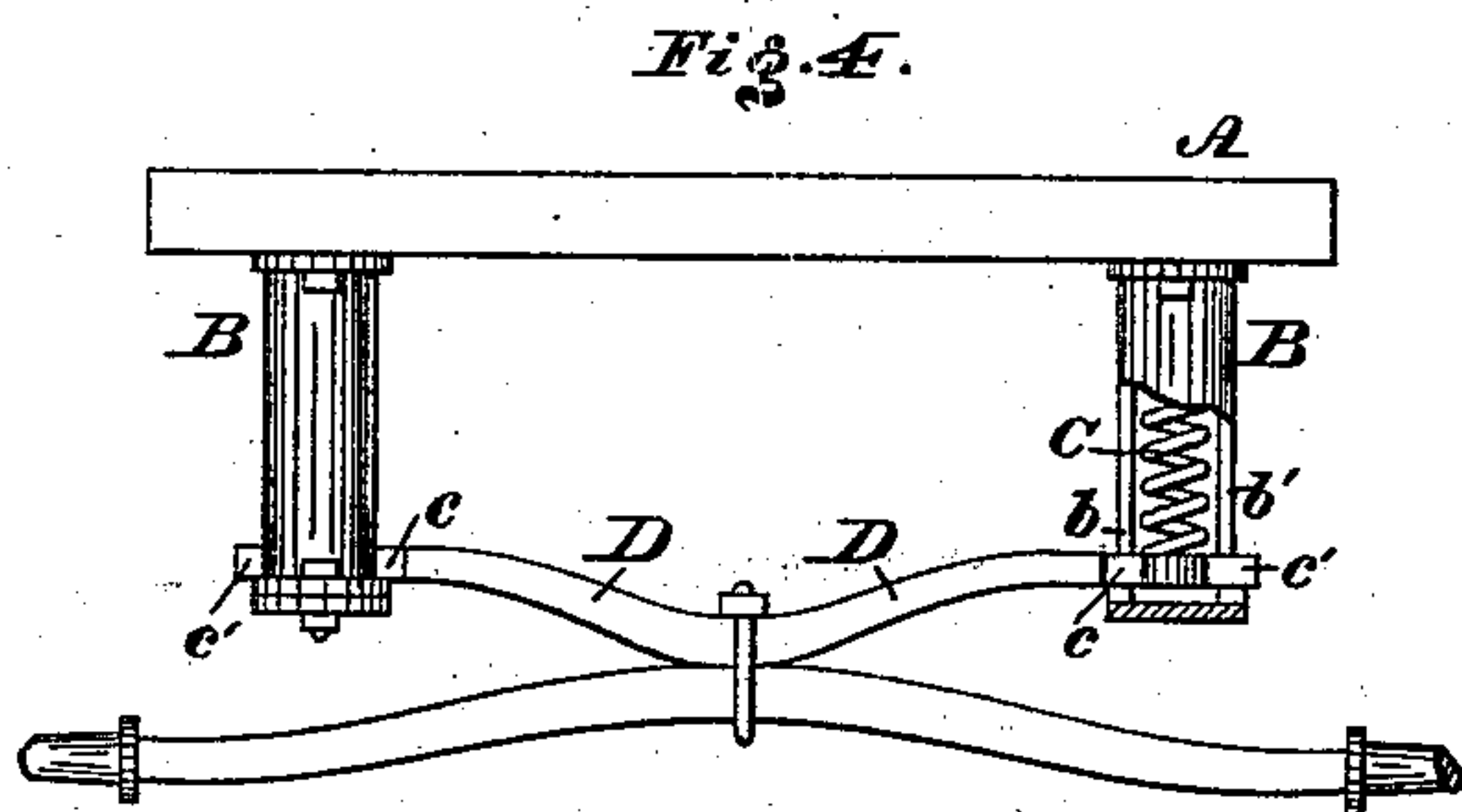
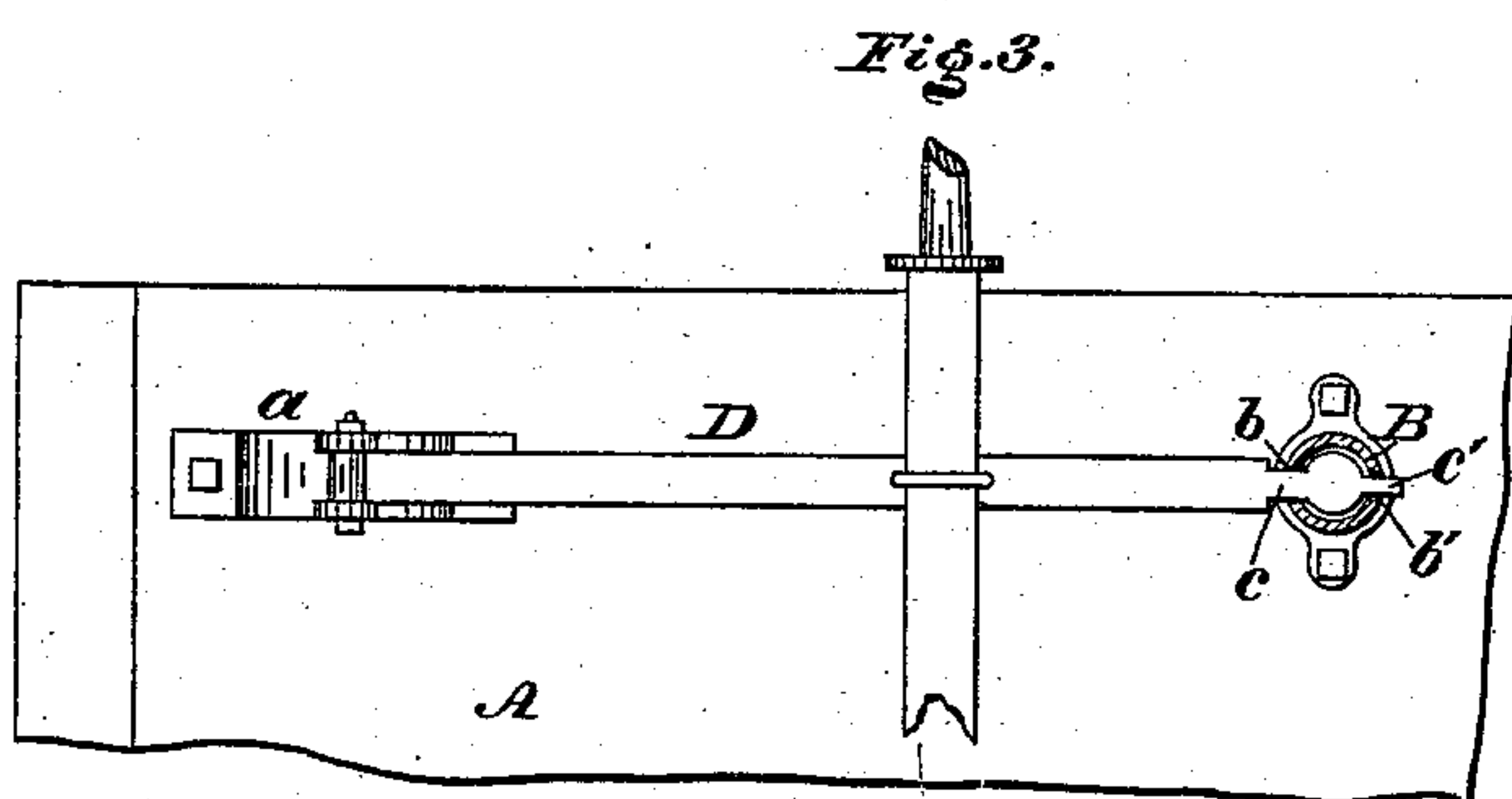
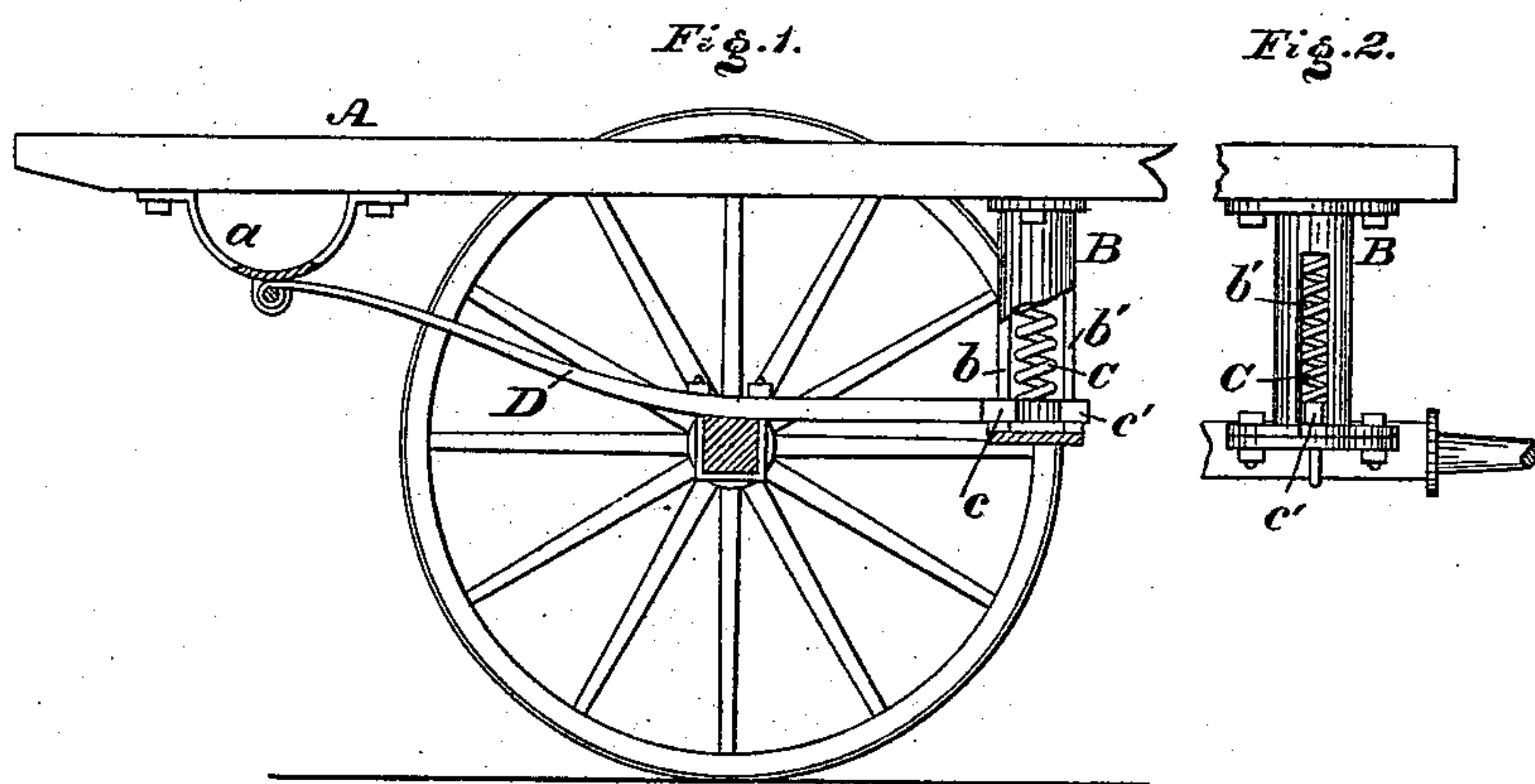


(No Model.)

L. RODENHAUSEN.
Vehicle Spring.

No. 236,090.

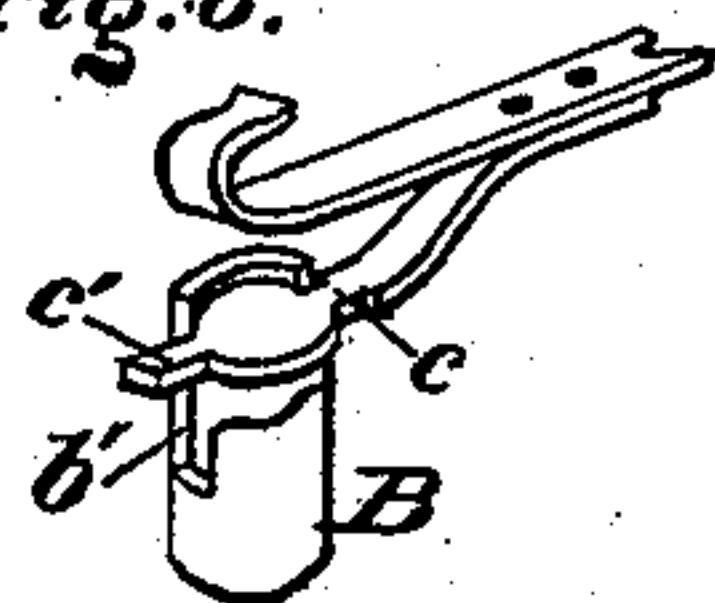
Patented Dec. 28, 1880.



Witnesses:

L. P. Grant,
W. A. Kircher

Fig. 6.



Inventor:

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UNITED STATES PATENT OFFICE.

LEONHARD RODENHAUSEN, OF PHILADELPHIA, PENNSYLVANIA.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 236,090, dated December 28, 1880.

Application filed September 18, 1880. (No model.)

To all whom it may concern:

Be it known that I, LEONHARD RODENHAUSEN, a citizen of the United States, residing in the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Vehicle-Springs, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation of the spring embodying my invention. Fig. 2 is a front view thereof. Fig. 3 is a bottom view thereof. Fig. 4 is a rear view of a modification thereof. Figs. 5 and 6 are perspective views of modifications.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of springs inclosed in boxes attached to proper parts of a vehicle and yielding arms, shackles, or other portions of the vehicle bearing against the springs, the boxes being slotted to admit and guide said arms, the whole forming simple, cheap, and easy-riding springs, as will be hereinafter set forth.

Referring to the drawings, A represents the body of a vehicle, to which are properly secured collars, sockets, or boxes B, for receiving coiled springs C, of which a suitable number is employed, the location being at front, rear, or middle of the body, as desired.

Bearing against the lower ends of the springs are arms D D, one end of each of which is pivoted to a stay or ear, *a*, secured to the body A, or otherwise connected to the body, as in Figs. 1 and 2, or both ends of each arm D may bear against the springs, as in Fig. 4, and in both cases the arms are attached to the axle and yield under the influence of the load.

In each box B is a vertical slot, *b*, which receives the neck *c* of the arm D, and opposite to it a vertical slot, *b'*, for the tongue *c'* at the extreme end of the arm.

It will be seen that the load imposed on the arms D is sustained, in a measure, by the springs C, so that the resiliency of the latter is exerted, thus causing the vehicle to ride with ease. As the springs are inclosed by the boxes B they are guided therein, and as the arms D play in the slots of the boxes they are guided by the walls of said slots, whereby binding of the movable parts is prevented and uniform motions of the springs are occasioned. Furthermore, the construction of parts is such that I produce simple and inexpensive springs.

In Fig. 5 the shackles or spars of the vehicle-body rest on the top of the springs, and through the latter are passed upright bolts, which project freely through the shackles or spars and are secured thereto by nuts or other fastenings, and are provided with clips for attachment to the axles. In Fig. 6 the upright bolts are dispensed with; but in both cases the slotted boxes are employed, and the operation is similar to that hereinbefore stated.

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

1. In combination with a vehicle-body and a spiral spring, C, and a slotted casing inclosing said spring, a yielding arm attached to one of the axles of said vehicle and having one end free to move in a vertical guide-slot of said casing, substantially as set forth.

2. The spring C and slotted boxes B, in combination with the arms D, formed with necks *c* and tongues *c'*, the slots of each box being on opposite sides, substantially as and for the purpose set forth.

LEONHARD RODENHAUSEN.

Witnesses:

JOHN A. WIEDERSHEIM,
A. P. GRANT.