(No Model.)

D. P. CLARK.

VEHICLE SPRING.

No. 423,219. Patented Mar. 11, 1890.

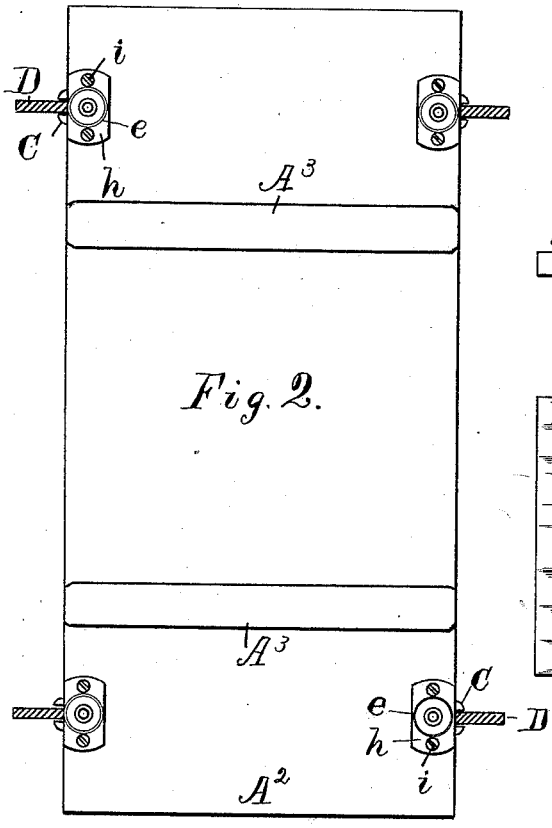


Fig. 2.

Fig. 3.

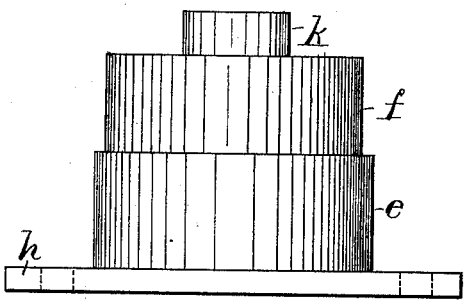
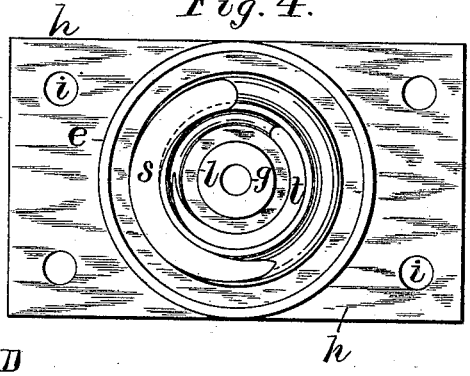


Fig. 4.



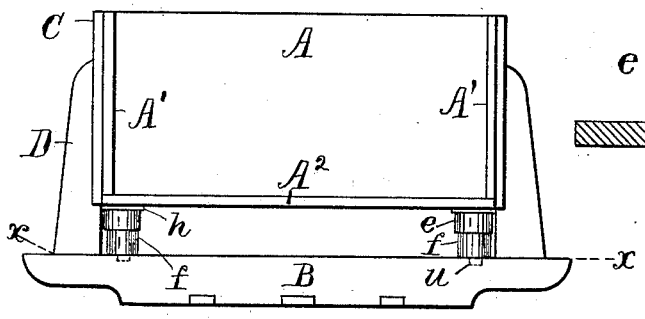


Fig. 1.

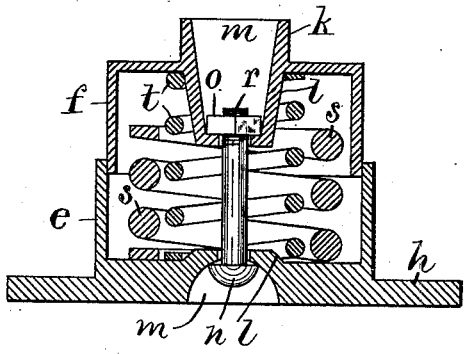


Fig. 5.

Attest:
L. Lee.
F. C. Fischer.

Inventor.
Dallas P. Clark, per
Crane & Miller, Attys.

UNITED STATES PATENT OFFICE.

DALLAS P. CLARK, OF JERSEY CITY, NEW JERSEY.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 423,219, dated March 11, 1890.

Application filed January 15, 1890. Serial No. 336,997. (No model.)

To all whom it may concern:

Be it known that I, DALLAS P. CLARK, a citizen of the United States, residing at Jersey City, Hudson county, New Jersey, have invented certain new and useful Improvements in Vehicle-Springs, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of this invention is to furnish a vehicle bolster-spring adapted for insertion between the bolster and the wagon-body without the intervention of a cross-bar.

The invention also includes a compact construction for combining a weak spring with a strong one to give the spring an elastic character under light loads and a power of much greater resistance with less elasticity under heavy loads.

The invention consists, partly, in a particular construction for the spring-box and its cap, and partly in the combination of the spring-box and cap with the bottom of the wagon-body by means of a flange upon the box and bolts inserted through the body.

The invention will be understood by reference to the annexed drawings, in which—

Figure 1 is an end view of a wagon-body and its bolster with two springs between the same and guides projected upward from the bolster between cleats upon the body. Fig. 2 is a plan on the under side of the wagon-body with the guides in section on line $x\,x$ in Fig. 1. Fig. 3 is a side elevation of one of the spring-fixtures; Fig. 4, a plan of the same with the cap removed, and Fig. 5 a vertical section where hatched through the center of the fixture.

A is the wagon-body, A′ its side-boards, and A^2 its bottom; B, one of the bolsters; and C, cleats upon the body to fit the guides D, projected upward from the bolster.

The construction shown in the drawings for the spring-fixture consists in a cylindrical spring-box *e*, containing a stiff spiral spring *s*, with a lighter spiral spring *t* of greater length inside of it, and a cylindrical cap *f*, fitted within the box to press upon the opposite ends of the springs. The cap is made as a hollow shell, with a cylindrical rim to move up and down within the spring-box *e*. The interior of the cap thus admits the spring in the same manner as the box *e*. The cap and box are formed with holes *g* at the center to receive a bolt *r*, and the box is provided with flange *h*, having bolt-holes *i*, by which it may be secured to the bottom of the wagon-body. Four such holes are shown in Fig. 4, but only two are shown in Fig. 2, and any number may be used that is most convenient. The inside of the cap and the inside of the box are provided with central bosses *l* to center the smaller and longer spring *t*, and the larger and shorter spring *s* is held in its position by fitting snugly about the smaller spring *t*. The cap is provided with a stud *k*, and the cap and box are both formed with recesses *m*, adapted to receive the head *n* and nut *o* upon the bolt. The head and nut serve to hold the cap and box together, and thus prevent the cap from accidental displacement from the spring-box when in use, while it also prevents the parts from separating, when handling, during their application to the wagon.

As shown in Figs. 1 and 2, the flange *h* upon the spring-box is applied to the bottom A^2 of the wagon-body to distribute the pressure of the springs upon a large surface, while the stud *k* is fitted to a small hole *u* in the bolster to center the spring thereon.

The pressure upon the cap is resisted first by the longer and weaker spring *t*, which thus yields and preserves its elasticity under the lighter loads to which the wagon-body may be subjected. When such load exceeds the resistance of the smaller spring, the cap is pressed downward into contact with the stronger spring *s*, the strength of which is then united to that of the weaker spring to sustain the heavier load.

I am aware that various combinations of spiral springs have been applied between the body and bolster of a wagon, but I am not aware that a spiral-spring box has ever been secured to the bottom of the wagon-body by bolts with the cap attached thereto, so that the vehicle-springs formed a permanent attachment to the wagon-body independent of the bolster. By such construction the springs could be readily lifted from the truck with the body and the truck used for other purposes, as for hauling logs, while the springs would remain in a suitable position upon the body ready to fit again upon the bolsters

when the body was applied thereto. The flange serves to distribute the pressure over a considerable area upon the bottom boards, and its construction permits its application close to the side-boards A′, which possess great rigidity.

The stiffness of the bolster does not necessitate the distribution of the pressure over its surface, and the cap with smaller area than the flange is applied thereto and held in place by the penetration of the stud *k* into a corresponding hole in the bolster. In practice the bottom boards of the wagon-body would be held together by cleats A^3, so that it may be raised from the bolster to insert the springs without weakening the bottom of the body.

My invention does not require the application of a cross-bar to the separate spring-boxes to hold them in place or to enable them to perform their functions, but the fixtures may be applied between the bolsters and the bottom of the body in any case where the bottom is held together by cleats.

Heretofore it has been very common to apply an iron cross-bar to the tops of two springs upon the bolster and to notch the ends of such cross-bar to fit the guides D, and thus hold the wagon-body in place. With such construction the iron of the cross-bar is very destructive to the wooden guides usually provided upon the bolster, and my construction obviates the need of any cross-bar, as the springs operate independently of one another. The spring-box and cap are adapted to receive springs of different strengths, which may be fed therein to suit the requirements of different purchasers.

I am aware that it is common to inclose car-springs in boxes of various shapes, with caps adapted to slide therein like that employed in my invention, and I therefore limit myself to the particular construction which I have devised.

Having thus set forth my invention, what I claim, and desire to secure by Letters Patent, is—

1. The vehicle-spring consisting in the cylindrical box *e*, provided with flange *h* and recess *m*, the cap *f*, provided with stud *k* and recess *m*, the spiral springs of different lengths inserted between the box and cap, and the bolt *r*, having its head and nut inclosed in the recesses *m*, as and for the purpose set forth.

2. The combination, with a wagon-body and its bolsters, of vehicle-springs consisting each in the cylindrical box *e*, provided with flange *h*, secured to the bottom of the wagon-body over the bolster, the cap *f*, provided with stud to fit a hole in the bolster, spiral springs of different lengths inserted between the box and cap, and the bolt *r* for securing the box and cap together, as and for the purpose set forth.

3. The combination, with a bolster and a wagon-body, of the spring-boxes *e*, having their flanges *h* applied to the bottom of the wagon-body, the caps *f*, having studs *k* fitted to holes *u* in the bolsters, the spiral springs of different lengths fitted between the cap and box, and the bolts *r*, for holding the cap and box together, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

DALLAS P. CLARK.

Witnesses:
THOS. S. CRANE,
HENRY J. MILLER.