A. R. GRAVES.

VEHICLE SPRING.

APPLICATION FILED AUG. 1, 1910.

1,002,055. Patented Aug. 29, 1911.

Fig. 1.

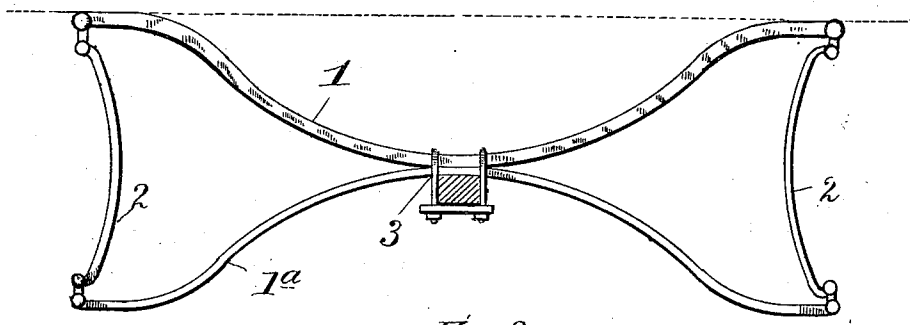


Fig. 2.

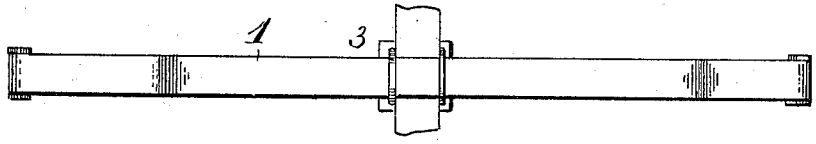
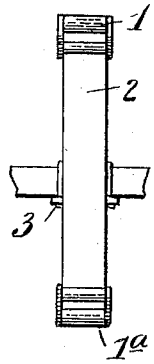


Fig. 3



A. R. Graves

Inventor

Witnesses

J. L. Ourand.

E. J. Williams

By Edwin Dufour

Attorney

UNITED STATES PATENT OFFICE.

ANDREW R. GRAVES, OF WASHINGTON, DISTRICT OF COLUMBIA.

VEHICLE-SPRING.

1,002,055. Specification of Letters Patent. **Patented Aug. 29, 1911.**

Application filed August 1, 1910. Serial No. 574,898.

To all whom it may concern:

Be it known that I, ANDREW R. GRAVES, citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Vehicle-Springs, of which the following is a specification.

My invention relates to improvements in vehicle springs.

The invention has for its object to provide for adding to the strength and durability of the spring while aiding its efficiency and at the same time preserving intact its resiliency and accordingly promoting its utility, which are desiderata especially in this class of devices.

The invention has for its further object to guard against the premature breaking and wearing out of the spring, in addition to supplementing its normal or own action with a compensating force, while it is capable of ready application and renewal as well as being relatively inexpensive of manufacture.

The invention consists of certain features of novelty as relates to its component parts and the assemblage of the latter substantially as hereinafter fully disclosed and defined by the claims.

In the accompanying drawing illustrating the preferred embodiment of my invention:—Figure 1 is a side elevation thereof as applied to a vehicle axle. Fig. 2 is a plan view of the invention, and Fig. 3 is an end elevation thereof.

In carrying out my invention I form the same of duplicate longitudinal resilient members 1, 1^a and duplicate transverse or end resilient members 2; each of which members may be considered a spring in itself, being preferably of spring-steel. The resilient members 1 are preferably of arcuate or semi-elliptic general outline, arranged back to back, that is, with their convexities presented toward each other and suitably secured or bolted together centrally, as at 3, in the usual way adopted for that purpose, as well understood. These said longitudinal members are, individually, in general outline as disclosed by the drawing, the upper member, however, being much the thicker or stouter and constituting what may be considered the spring proper (1), the same directly receiving or carrying the load or pressure and practically without the aid of the other or much lighter member (1^a) in effecting that end. The lighter or thinner member has in view, primarily, to provide additional tension or resiliency, thus reinforcing or supplementing the tension of the spring proper (1), and is initially drawn taut thereby retarding any excessive recoil of the thicker or main spring in restoring the latter to its initial or normal position when relieved of the load-pressure, while, of course, the resisting action of the spring proper will also be augmented.

The transverse or end resilient members 2 are preferably slightly arcuate or curved in contour and effect the coupling together of the longitudinal springs 1, 1^a, being suitably shackled thereto in the usual way. It is apparent that the transverse or coupling members 2 will by reason of lightness and resiliency, as well as by their curvature, as pressure is exerted or delivered upon the superposed spring 1, suitably flex under such pressure and accordingly accommodate themselves to the movement of said spring, and also lend further resiliency or tension thereto, and also aid the resisting action of the spring.

I claim:—

1. A vehicle spring including two semi-elliptic spring members connected back-to-back, and curved end resilient members connecting said semi-elliptic springs at their ends.

2. A vehicle-spring comprising semi-elliptic resilient members, opposed back to back, each being in a single piece having substantially right-lined terminals, the upper member being the heavier, curved or arcuate end resilient members, and shackle-connections between said semi-elliptic members and said end members.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW R. GRAVES.

Witnesses:
JOS. M. COLEMAN,
W. B. SLACK.