(No Model.)

# G. A. BROWN.

## VEHICLE SPRING.

No. 366,814. Patented July 19, 1887.

Fig. 1.

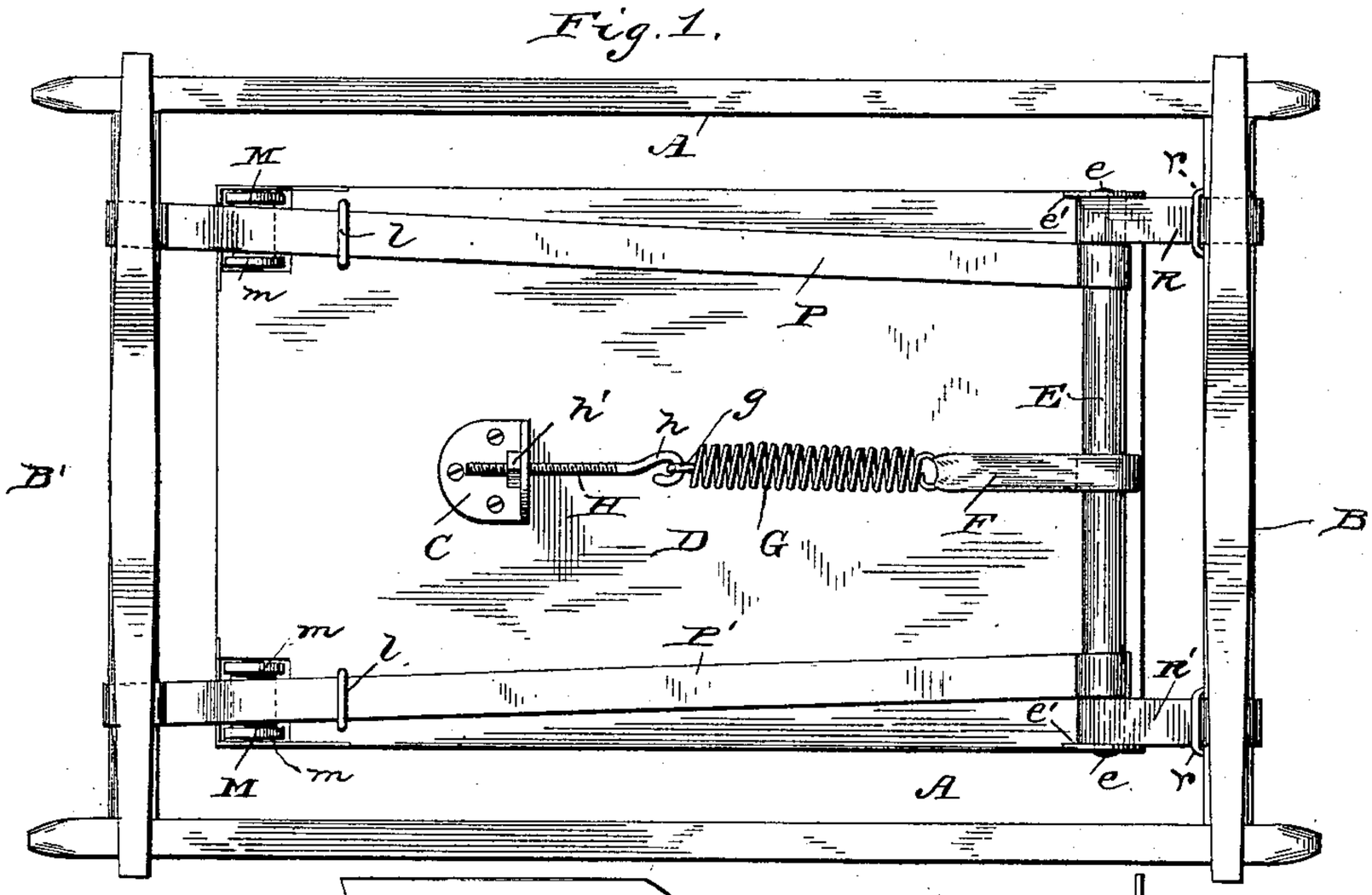



Fig. 2.

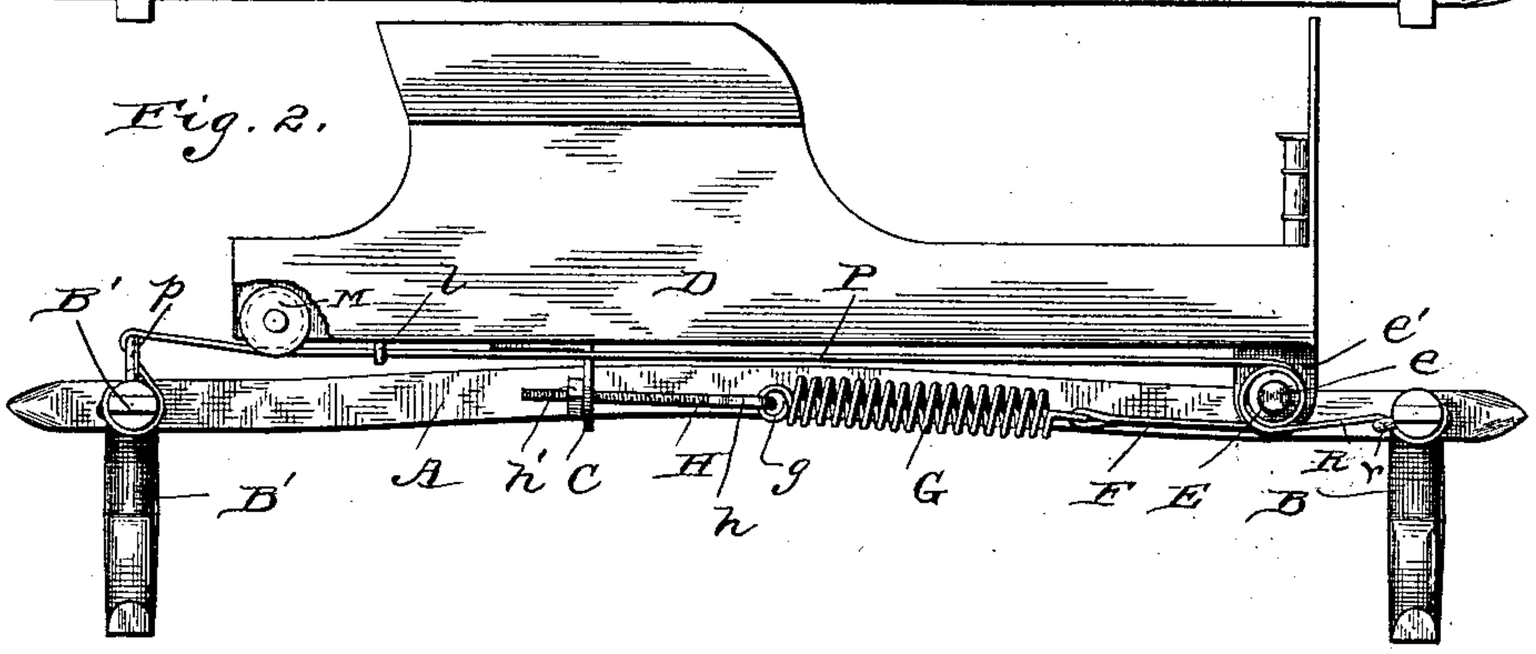
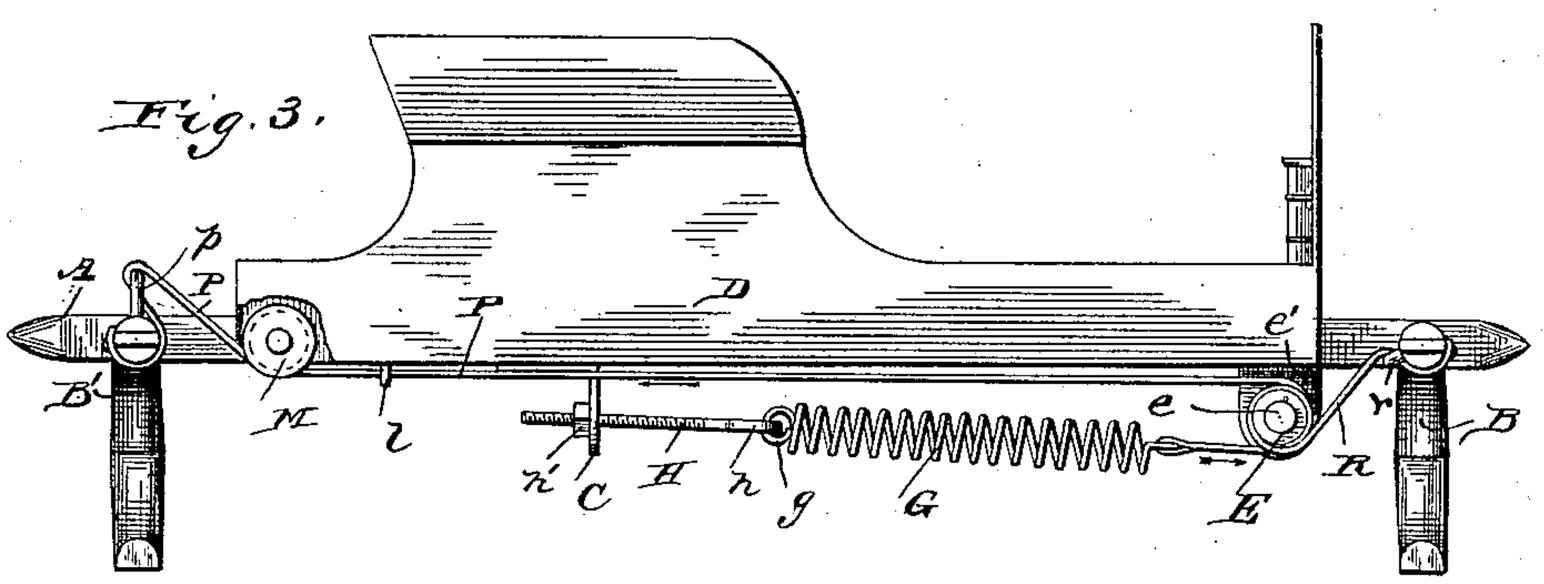



Fig. 3.




Witnesses

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# UNITED STATES PATENT OFFICE.

GEORGE A. BROWN, OF GRAND LEDGE, MICHIGAN.

## VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 366,814, dated July 19, 1887.

Application filed March 21, 1887. Serial No. 231,716. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE A. BROWN, a citizen of the United States, residing at Grand Ledge, in the county of Eaton and State of Michigan, have invented certain new and useful Improvements in Vehicle-Springs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in vehicle-springs.

The object of my invention is to provide a yielding and elastic support for vehicle-bodies, which shall be so constructed that the weight of the load shall be equally distributed over all parts of the support, and thus prevent one section from being strained and overburdened while another section remains free from the weight of the load; and my invention consists in certain novel features of construction and combinations of parts, more fully described hereinafter, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a bottom view of a vehicle with my device attached; Fig. 2, a side elevation with one of the side bars of the running-gear partially broken away, and Fig. 3 a side elevation showing the position of the several parts when the body of the vehicle is depressed.

The running-gear of my improved vehicle is composed of a rectangular frame, which consists of the side bars, A, into which the ends of the bolsters B B′ are mortised. Within this rectangular frame the body D of the vehicle is suspended.

On the under side of the body D, near one end thereof, the roller E is located in a position substantially parallel with the end of the vehicle-body. The roller is provided with suitable journals, *e e*, adapted to revolve in suitable bearings in the ears *e′ e′*, rigidly secured to the edges or bottom of the body D in any convenient manner.

A tension-strap, F, formed of any strong pliable and durable material, is wound around the roller E, having one end secured thereto, so that its free end will leave the roller on its under surface and extend under the body of the vehicle, where it is attached to a suitable spring, G, which is preferably of a spiral form. The opposite end of the spring G is provided with an eye, *g*, which engages with the hook *h* on the end of the threaded adjusting-bolt H. A bracket, C, is rigidly secured to the bottom of the body D, opposite that part of the roller E on which the tension-strap F is wound. The bracket C is provided with a suitable aperture, through which the threaded end of the adjusting-bolt H passes, and in which the bolt is adjustably held by the nut *h′*.

It will be readily seen that the tension of the spring G can be changed by simply turning the nut *h′* to the right or left, thus regulating the force with which the tension-strap F tends to rotate the roller E.

The roller end of the vehicle-body is yieldingly upheld by two or more supporting-bands, R R′, each having one end secured to the roller B and being wound around the opposite ends of the roller in an opposite direction from that of the tension-strap F, so that when the roller is rotated to wind up the supporting-bands the tension-strap is unwound, or vice versa. The free ends of the supporting-bands R R′ extend outward from the under side of the roller across to the bolster B, to which they are securely fastened. The opposite end of the vehicle-body is also yieldingly upheld by the supporting-bands P P′, which are also secured to and wound around the roller E in a similar manner and in the same direction as the bands R R′, except that the free ends of the bands P P′ leave the roller on its upper side and extend along the under side of the vehicle-body to the bolster B′, to which they are securely fastened.

In the end of the vehicle-body, which is immediately supported by the straps P P′, are journaled the anti-friction rollers M M in suitable depressions in the edge of the body, so that the bands P P′ can freely operate over their under surfaces, and thus allow the bands to operate easier and prevent the wear by rubbing back and forth over the edge of the vehicle-body. The anti-friction rollers M M are provided on their outer edges with the annular flanges *m*, for the purpose of confining the straps upon their under surfaces. The supporting-bands P P′ are also held from displacement by the staples *l l*, which also prevent the body of the vehicle from being thrown

up and off of the supporting-bands by a sudden lurch or jar.

As the supporting-bands P P′ leave one edge of the vehicle-body in a plane above that in which the bands R R′ leave the opposite edge, I attach the straps or bands to the bolsters in the following manner, so that the upper surface of the body or platform shall be normally horizontal:

Bands P P′, which leave the body in a plane above the straps R R′, are passed over the tops of the brackets *p* on the upper surface of the bolster B′, and thence through the brackets and around the under side of the bolster, to which they are secured.

The bands R R′ are passed immediately through the brackets *r* on the inner side of the bolster B, and thence around the under side of the bolster, to which they are secured. By this arrangement the body is not only held in a level horizontal position, but the strain of the supporting-bands on the bolsters and running-gear of the vehicle is greatly reduced and a strong yielding coupling is effected.

As the tension of the spring G is constantly tending to unwind the tension-strap F, and thus rotate the roller in a direction which will wind up the supporting-bands, they are thus kept stretched tight; but if the body of the vehicle is loaded, the weight pressing down upon the supporting-bands tends to unwind them, which causes the roller to rotate in a direction which will wind up the tension-strap F, and thus stretch the spring; but the instant the weight is removed from the vehicle-body the spring will contract to its normal condition, rotating the roller, thereby taking up the slack of the supporting-bands and raising the body of the vehicle to its normal position.

It makes no difference on what part of the vehicle-body the load is placed, as all the supporting-bands co-operate equally in supporting the weight, for if the pressure on one edge of the platform or body causes the band immediately supporting that edge to unwind and rotate the roller, all the other supporting-bands are necessarily unwound an equal amount, and the platform is depressed horizontally and evenly throughout, although the load may be upon one edge or corner of the vehicle-body. Thus it will be seen that the necessity of shifting the load on the platform or body in going up and down hills is avoided, and that it is almost impossible to overturn the body of the vehicle when traveling over rough and uneven roads, for the supporting-bands are always unwound an equal amount from the roller, and when the running-gear is in an oblique position the platform tends to remain horizontal, for the supporting-bands that extend to the upward side of the running-gear are unwound the same amount as those which extend to the downward side.

My device possesses the advantages of being extremely light, durable, cheap, and simple in construction, and exceedingly comfortable to the occupant when riding over rough and uneven roads, for the motion is easy and springy, and the supporting device is not easily broken or injured, as is the case with the steel and iron elliptic springs commonly used.

It is evident that slight changes might be resorted to in the form and arrangement of the parts described without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the construction herein set forth; but,

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

1. In a vehicle-spring, a spring-actuated roller journaled in suitable bearings on the vehicle-body, in combination with two or more supporting-bands secured, respectively, to said roller and to the running-gear, whereby one end of the body is supported, and two or more additional supporting-bands secured to said roller and extending beneath the body of the vehicle, and thence to the running-gear, to which they are secured, whereby the opposite end of the body is supported, substantially as described.

2. In a vehicle-spring, supporting-bands secured to a spring-actuated roller located on the vehicle-body, and having their opposite ends secured to the running-gear, in combination with brackets, through which said supporting-bands are adapted to pass, said brackets being secured to the running-gear in such a manner that the vehicle-body will be upheld in a horizontal position by the supporting-bands, substantially as described.

3. In a vehicle-spring, the combination of a roller journaled in suitable bearings on the vehicle-body, the supporting-bands secured to said roller and having their free ends secured to the running-gear, the tension-strap secured to said roller and having its free end secured to a suitable spring, the threaded bolt, to which said spring is secured, and a bracket and nut whereby the spring is adjustably held, substantially as described.

4. In a yielding support for vehicle-bodies, a roller adapted to rotate in suitable bearings secured to the body portion, in combination with supporting-bands, each having one end secured to the bolsters of the vehicle and their opposite ends wound around said roller, and an adjustable spring connected to said roller, for the purpose and in the manner substantially as described.

5. In a vehicle-spring, the supporting-bands, each having one end secured to the running-gear and their opposite ends extending beneath the body of the vehicle, and a spring-actuated roller, to which the ends of all the supporting-bands are secured, in combination with the running-gear and body of the vehicle, substantially as described.

6. In combination, a roller journaled in

bearings on the body of a vehicle, supporting-bands secured to the running-gear of the vehicle and wound around the roller, and a tension-strap wound around the roller and having its free end connected to a suitable spring, said spring being attached to a threaded adjusting-bolt, whereby the tension of the spring can be regulated, substantially as described.

7. In a yielding support for vehicle-bodies, the anti-friction rollers journaled on the vehicle-body and over which the supporting-bands are adapted to operate, in combination with the staples which hold said bands loosely in position, substantially as described.

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

GEORGE A. BROWN.

Witnesses:

GEO. W. IRISH,

JAS. B. CHAMBERLIN.