

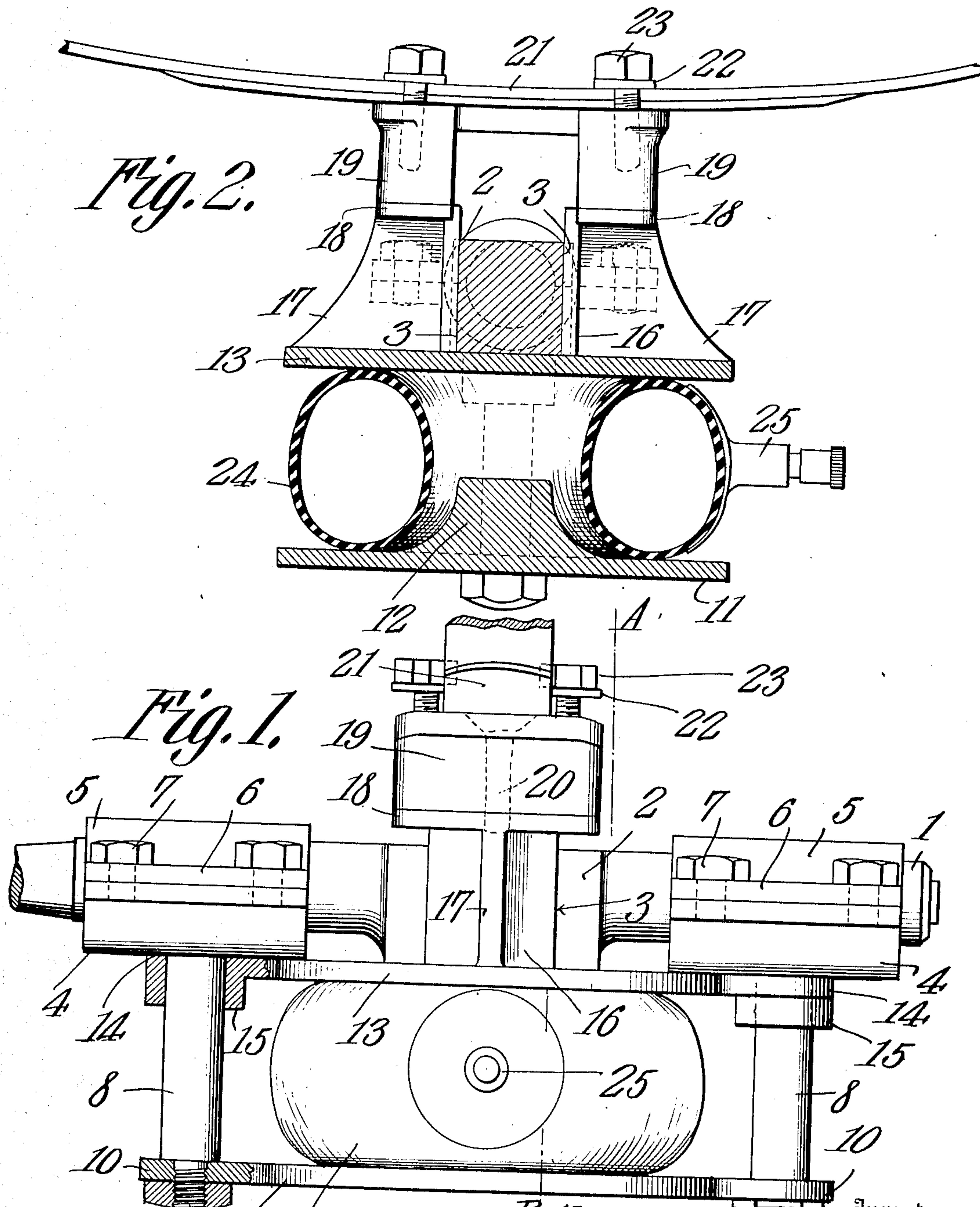
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VEHICLE SPRING.

APPLICATION FILED MAY 7, 1908.

912,988.

Patented Feb. 23, 1909.



Witnesses

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# UNITED STATES PATENT OFFICE.

ALEXANDER CARPENTER AND CHARLES C. KISSELLE, OF FINDLAY, OHIO.

## VEHICLE-SPRING.

No. 912,988.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed May 7, 1908. Serial No. 431,432.

*To all whom it may concern:*

Be it known that we, ALEXANDER CARPENTER and CHARLES C. KISSELLE, citizens of the United States, residing at Findlay, in the county of Hancock, State of Ohio, have invented a new and useful Vehicle-Spring, of which the following is a specification.

This invention relates to vehicle springs, and more particularly to devices of this type utilizing pneumatic cushions either in lieu of or in addition to the ordinary vehicle springs.

The object of the invention is to provide a cushion made of two opposed bearing plates supported from the axle of the vehicle, one of said plates being fixed relatively to the axle while the other plate is movable relatively thereto and is connected to the vehicle body.

A further object is to provide a pneumatic cushion insertible between the plates and readily removable therefrom in the event of injury thereto without the necessity of separating any of the rigid parts of the structure.

Another object is to provide simple means for guiding the removable portion of the device whereby binding of the parts is eliminated and free action secured.

With these and other objects in view the invention consists of certain novel features of construction and combinations of parts which will be hereinafter more fully described and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings,—Figure 1 is a front elevation of a cushion embodying the present improvements. Fig. 2 is a section on the line A—B, Fig. 1.

Referring to the figures by characters of reference, 1 designates an axle having a squared portion 2 provided in opposite faces with broad vertically-extending grooves 3, and secured to this axle at opposite sides of the squared portion 3 are clamping plates 4 and 5 having integral outstanding flanges 6 held together by means of bolts 7 or in any other preferred manner. Each plate 4 has an integral stem 8 depending therefrom, the two stems being parallel and having reduced threaded extensions 9 at their lower ends which project through ears 10 extending in opposite directions from a substantially circular base plate 11. This plate has a central

upstanding boss 12 integral therewith, and the peripheral portion of which is concave, as indicated in Fig. 2. Any suitable means, such as nuts, engaging the extensions 9 can be provided for securely binding the ears 10 against the stems 8, thus holding the plate 11, stems 8 and plates 4 in fixed relation with the axle 1.

Interposed between the stems 8 is a relatively movable plate 13 having oppositely-extending ears 14 provided with tubular extensions 15. The stems 8 extend through these ears and their extensions and constitute guides therefor.

Upstanding from and integral with the plate 13 are guide plates 16 arranged in parallel planes and mounted to slide within the opposed grooves 3 within the angular portion 2 of the axle. A reinforcing web 17 is provided for each of these plates 16, and a flange 18 extends outwardly from each of the plates 16 and above its web 17, as clearly indicated in the drawings. Arranged on these flanges is an arched cap 19 secured in position in any suitable manner, preferably by means of bolts inserted through the end portions of the cap and into the flanges 18 and their webs 17, as indicated at 20 in Fig. 1. Resting upon this cap 19 are vehicle springs 21 of any preferred form and preferably secured in place by means of cross plates 22, the ends of which are engaged by bolts 23 projecting into the end portions of the cap.

Interposed between the plates 11 and 13 is a tubular flexible cushion 24 having a valved tubular stem 25 such as usually employed in connection with pneumatic tires, and this tubular cushion is designed to be inflated so as to maintain the plates 11 and 13 normally spaced apart to their greatest extent, as indicated in the drawings. When the tube is thus inflated the boss 12 will project thereinto, as shown in Fig. 2, and thus prevent displacement thereof. It will be apparent, however, that whenever the air is partly or entirely removed from the cushioning tube, said tube can be readily withdrawn from between the plates by passing it over the end of the boss.

When the cushion is inflated and the device is in use the weight of the load will be transmitted through the cap 19 and the plates 16 to the movable plate 13, which is supported solely by the cushion 24. This



plate, however, is capable of movement relative to the axle by reason of its slidable connection with the stems 8 and with the angular portion 2 of the axle. It will be apparent therefore that all jarring will be taken up by this cushion, and a vehicle supplied with a set of these devices will travel as easily as one equipped with pneumatic tires, even though said vehicle be provided with metallic or other forms of unyielding tires.

What is claimed is:—

1. The combination with an axle, guides fixedly secured thereto and depending therefrom, and a base plate carried by the guides; of a plate movably mounted upon the guides and above the base plate, guide plates upstanding therefrom and slidably engaging the axle, and a cushioning ring interposed between the base and movable plates.
2. The combination with an axle having oppositely-disposed guide grooves therein, guide stems depending from the axle and a base plate fixedly connected to the stems; and a plate slidably mounted upon the stems, means rigidly connected to said plate for reciprocating within the grooves, vehicle spring-engaging devices carried by said means, and a cushioning ring interposed between the base and movable plates.
3. The combination with a base plate, stems upstanding therefrom and means for connecting the stems to an axle; of a plate movably mounted upon the stems, spaced guide plates upstanding therefrom, a spring-supporting cap secured upon said upstand-

ing plates, and a cushioning ring removably mounted between said base and movable plates.

4. A cushion for vehicles comprising a base plate, spaced means for securing said plate to a vehicle axle, and against movement relatively thereto, a movable plate guided by said spaced means and disposed above the base plate, a central projecting portion upon the base plate, and an inflatable cushioning ring interposed between the base plate and the movable plate and held against displacement, while inflated, by said projecting portion.

5. The combination with an axle having guides; of a base plate, a central projection thereon, spaced means for securing said plate fixedly to the axle, a movable plate guided by said spaced means and disposed above the base plate, means carried by the movable plate for movably engaging the guide upon the axle, and an inflatable cushioning device insertible between the spaced guiding means and between the plates, said cushioning device being held, when inflated, against displacement by the projecting portion.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

ALEXANDER CARPENTER.  
CHARLES C. KISSELLE.

Witnesses:

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