(No Model.)

N. WESTON.

VEHICLE.

No. 606,611. Patented June 28, 1898.

Fig. 1.

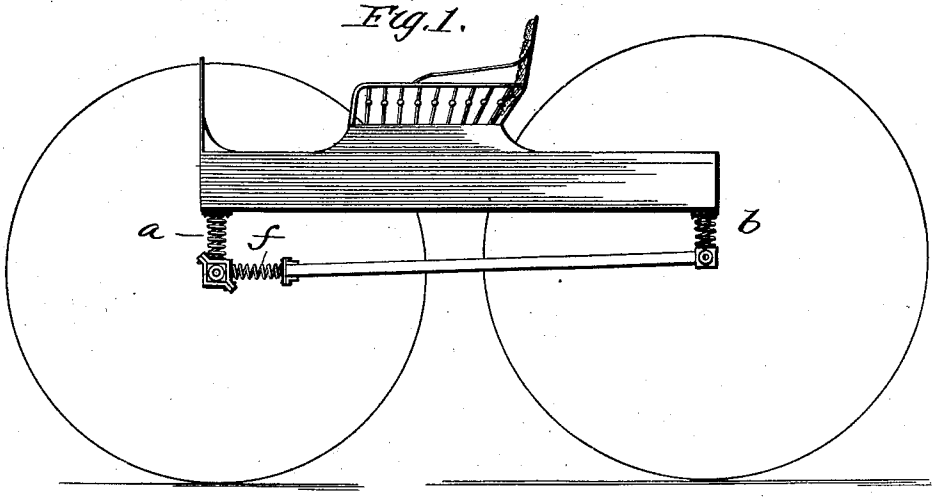


Fig. 2.

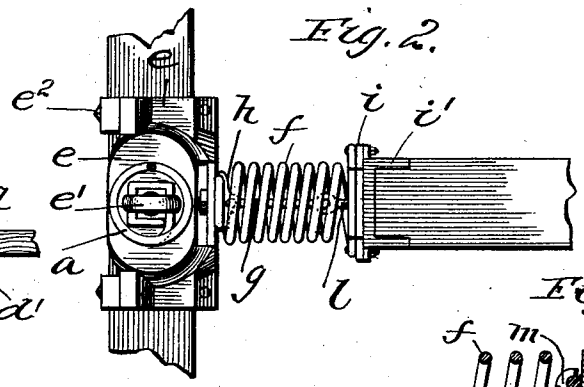


Fig. 3.

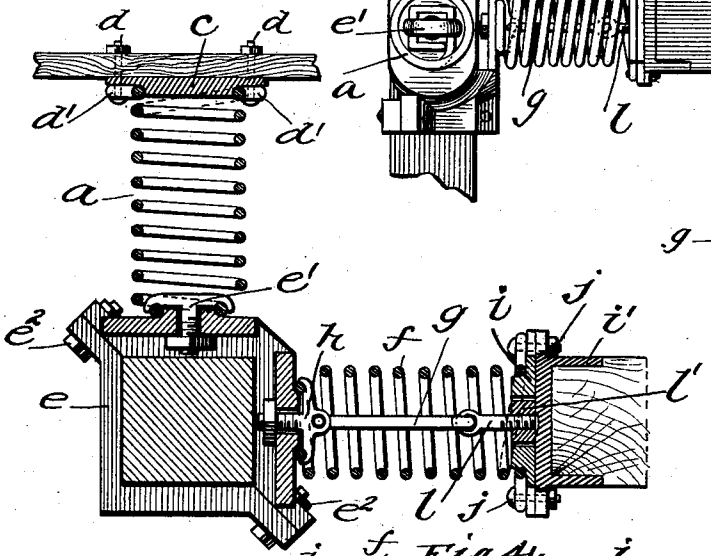


Fig. 5.

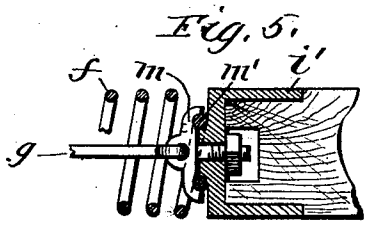


Fig. 6

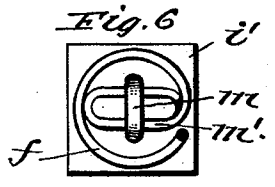
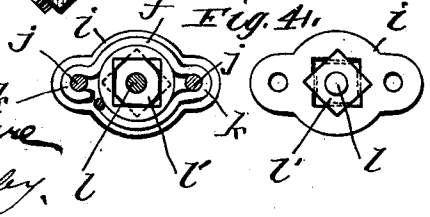


Fig. 4.



Witnesses

G. M. Lamacure

G. H. Walmsley.

Inventor

Nathaniel Weston

By Alexander & Davis

Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

NATHANIEL WESTON, OF REDMONDS, VIRGINIA.

VEHICLE.

SPECIFICATION forming part of Letters Patent No. 606,611, dated June 28, 1898.

Application filed October 9, 1897. Serial No. 654,626. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL WESTON, a citizen of the United States, residing at Redmonds, in the county of Albemarle and State of Virginia, have invented certain new and useful Improvements in Noiseless Buggies or other Vehicles, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention consists, essentially, in providing a connection between the reach and the front axle which will permit the axle to have a practically universal flexible movement with respect to the reach, the connection being yieldable laterally and torsionally and so constructed that there will be no pivot-bolts to wear loose and rattle and no twisting strain on the reach, as more fully hereinafter set forth.

The invention further consists in mounting the vehicle body or box upon springs preferably rigidly connected at their upper ends to the box and at their lower ends to the axles, there being preferably but one spring, and that of a spiral form, in the middle of the front axle and as many as desirable of a spiral or other form on the rear axle, whereby the box will be yieldingly supported and the front axle will be free to turn and yield in all directions, the central front spring permitting this by reason of its susceptibility to torsional and longitudinal strains, thereby entirely avoiding the use of the fifth-wheel and king-bolt and other connecting devices that make noise and wear and rattle, as more fully hereinafter set forth.

In the drawings annexed, Figure 1 is a side elevation of a buggy provided with my improvements, the wheels on one side being omitted; Fig. 2, a plan view showing the connection between the reach and the axle, the vertical body-spring being shown in section; Fig. 3, a vertical sectional view showing the springs connecting the axle to the box and to the reach; Fig. 4, detail views of the devices connecting the spring and the reach; Figs. 5 and 6, detail views of a modified form of devices connecting the spring and the reach.

This invention will be best understood by a detail description of the form of devices I prefer using.

Referring to the drawings by letters, *a* designates the vertical coil-spring supporting the front end of the buggy-box and rigidly connected to the same at its upper end and at its lower end to the front axle about midway the ends of the latter, and *b* the spring or springs connecting the rear end of the box to the rear axle, this spring or springs being of a spiral form, as shown, or any other form desired. The buggy-box is unsupported except by these springs, whereby it may yield in all directions. The central front spring not only affords a resilient support for the buggy-box, but also affords a sort of universal connection between the same and the front axle, whereby the axle will be free to yield in all directions. It will be observed that this spring connection permits the axle to freely turn in either direction in turning the buggy around, the spring yielding torsionally for this purpose. This peculiarly-arranged spring also permits the front axle to vibrate vertically without communicating any jar to the buggy-box. As will be observed, it entirely avoids the use of the king-bolt and fifth-wheel or circle and similar connections between the axle and the buggy-box, thereby avoiding all wear and noise and rattling of the parts, which, as is obvious, is of great advantage. The ends of the spring may of course be connected in any suitable manner without departing from the spirit of my invention. In the drawings the upper coil of the spring fits over a circular boss on a plate *c*, and said plate is bolted to the bottom of the box by means of bolts *d*, said bolts passing up through lateral ears *d'*, formed in the upper coil, and through corresponding ears on the plate. The lower coil of the spring fits around a boss formed on the upper side of a clip *e*, bolted around the axle, said coil being slightly smaller than the main coil of the spring and being held in place by a short bolt *e'*, passing down through a hole in the upper side of the clip and having its head elongated to engage over said coil, the nut on said bolt being inclosed in a recess under the upper plate or bar of the clip. The clip *e* is divided diagonally and clamped over the axle by suitable bolts e^2.

The letter *f* designates a coil-spring connecting the front end of the reach to the front axle, and *g* a central connecting bar or link,

also connecting the front end of the reach to the axle and serving not only to take up the draft strain, but also to keep said spring compressed. The front coil of said spring fits around a boss formed on the rear side of the clip *e* and is clamped thereon by means of an eyebolt *h*, whose extended head engages over said coil and whose threaded shank passes through an opening in the rear plate of the clip and terminates short of the axle, the nut on this shank lying out of the way in a recess between the rear side of the axle and the rear wall of the clip. The rear end of the spring fits around a boss on a plate *i*, bolted to the front end of the reach, being fastened thereto by a pair of bolts *j*, which pass through oppositely-projecting ears *k*, formed on the end coil of the spring, and through corresponding ears on the plate *i* and the iron *i'* on the reach. An eyebolt *l* is threaded and riveted into a nut *l'*, which rests in a square central recess in plate *i* and is clamped to the reach by said plate, the four reduced corners of said nut resting in recesses in the inner face of said plate *i*, the nut being thereby held against withdrawal from the plate. In attaching the spring to the reach the spring is first compressed to the desired tension by means of a vise or other suitable instrument, the forward end of the spring having been first attached to the clip and the plate *i* having been placed in the rear end of the spring. As the spring is compressed the rigid nut *l'* will be passed through the central square opening in the plate *i* and said plate will be given a quarter-turn, so that the shoulders on the corners of the nut will come opposite the recesses in the rear side of said plate. When the compression of the spring is eased up, said corners of the nut will enter said recesses, and thereby lock the nut and the plate together, holding the spring in its compressed condition. It will be observed that the link or the rod *g* loosely connects the eyebolts and is free to swing in any direction.

It is obvious that any other suitable device may be employed for connecting the ends of the spring respectively to the clip and the reach. For instance, the devices shown in Figs. 5 and 6 may be employed. In this arrangement the reach-iron is provided with a central opening for the passage of the threaded shank of an eyebolt *m*, whose elongated head engages over the rear coil *m'* of the spring *f* and clamps the same around a boss formed on said reach-iron. To permit the eyebolt *m* to be inserted into the coil *m'* and turned quarter around to extend over the coil, said coil is elongated, as shown in Fig. 6. The boss on the reach-iron is shaped so that the elongated coil will fit around it. This peculiar manner of attaching the reach to the axle has a number of important advantages. It will be observed that the draft strain is taken up by the endwise unyielding pivotal connection inclosed in the spring and that the expansive force of the spring takes up all the wear in the joints of said connection and prevents the same making noise and rattling however worn the joints may be. The joints in said connection allow of a practically universal movement, permitting the front axle and the reach to yield laterally independently of each other. As is obvious, the axle will be permitted to rock or oscillate vertically when one of the front wheels passes over an obstruction without twisting or straining the body or reach, the spring taking up the torsional strain, thereby avoiding a very serious objection to the ordinary manner of attaching the reach to the axle. The draft strain will come upon the link connection and the backing strain will be divided between the spring and said link connection, the spring taking up most of this latter strain, its coils being pressed quite closely together for this purpose and for the further purpose of affording a firm connection between the reach and the axle and keeping the desired tension upon the connecting-link.

I have shown but one spring connecting the body to the front axle and but one connecting said axle to the reach. It is obvious, however, that two or more springs may be employed in heavier vehicles. Where two or more springs are employed, they should be placed side by side, so that they will afford practically as free a movement of the front axle as the single springs. It will also be obvious that the connecting-link *g* may be omitted in light vehicles; but in that case the spring will be somewhat heavier and will not be compressed. It is likely, however, that in all cases a connection of some sort will be advisable to keep the spring compressed and take up the draft strain. Any suitable swinging connection may be employed instead of the rod shown, as the main function of that rod is to take the draft strain and keep the spring compressed.

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

1. In a vehicle, the combination of the axles and wheels and body, suitable means for supporting the body on the rear axle, and a coil-spring supporting the front end of the body on the front axle, said spring being connected at its respective ends to the axle and to the body whereby the spring may yield vertically and torsionally, as and for the purposes set forth.

2. In a vehicle, the combination of the axles and wheels and body, suitable means for supporting the body on the rear axle, and a coil-spring supporting the front end of the body on the front axle, said spring being connected rigidly at its upper end to the body approximately at its center and at its lower end rigidly to the axle about midway the length of the same.

3. In a vehicle, the combination of the axles and wheels and body, suitable means for supporting the body on the rear axle and a coil-

spring supporting the front end of the body on the front axle, means connecting the upper end of the spring to the body, and means connecting the lower end of the spring rigidly to the axle, said means consisting of a clip clamping the axle and a short bolt having its head engaging over the lower coil of the spring and its threaded shank passing through an aperture in the clip, and a nut on said bolt lying in a recess between the axle and said clip.

4. The combination of a pair of axles and supporting-wheels, a vehicle-body, means for supporting the body on the rear axle, and a resilient support directly connecting the body to the front axle, about midway the length of the latter, said support being yieldable torsionally.

5. In a vehicle, the combination of the axles and supporting-wheels, a reach connected to the rear axle, an elastic device connecting the reach to the front axle, said device being yieldable longitudinally and torsionally.

6. The combination in a vehicle of the axles and supporting-wheels, a reach extending forward from the rear axle, a strong spiral spring connecting the forward end of the reach to the front axle, the respective ends of said spring being rigidly connected to the reach and to the axle.

7. The combination of a pair of axles and supporting-wheels and a reach extending forward from the rear axle, a coil-spring interposed between the forward end of the reach and the axle, and a connecting device connecting the reach to the axle and holding the spring compressed.

8. The combination of a pair of axles and supporting-wheels, a reach extending forward from the rear axle, a flexible connecting device connecting the reach to the front axle, and a compressed coil-spring interposed between the reach and the axle and adapted to yield laterally and torsionally.

9. The combination of a pair of axles and supporting-wheels, a reach extending forward from the rear axle, a swinging connecting-link connecting the reach to the axle, an eyebolt attached to the front end of the link, a clip connecting the eyebolt to the axle, an eyebolt connected to the rear end of the link and provided with a rigid nut, a plate clamping said nut to the front end of the reach, and bolts connecting the plate to the reach.

10. The combination of a pair of axles and supporting-wheels, a reach extending forward from the rear axle, a coil-spring interposed between the front end of the reach and the front axle, a swinging connecting-link within the spring, and eyebolts connecting the link respectively to the axle and the reach.

11. The combination in a vehicle, of the axles and supporting-wheels, a reach, an elastic device interposed between the forward end of the reach and the front axle, said device being yieldable longitudinally and torsionally, and means connecting the reach to said axle and holding the elastic device compressed, as and for the purpose set forth.

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

NATHANIEL WESTON.

Witnesses:
C. D. DAVIS,
WM. R. DAVIS.