

A. HIGLEY.
Wagon Spring.

No. 113,664.

Patented April 11, 1871.

FIG. 1.

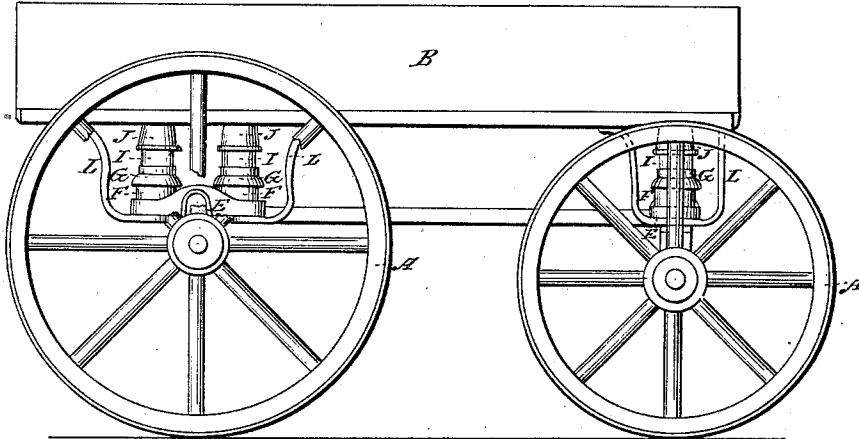


FIG. 2.

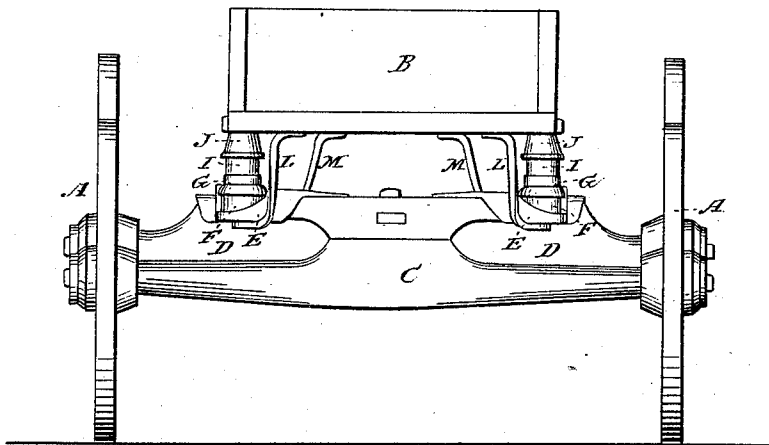
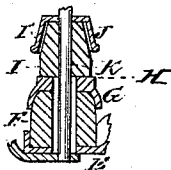


FIG. 3.



WITNESSES:

J. B. Burridge.
D. B. Humphrey.

INVENTOR:

A. Higley.
For Burridge & Co
Attorneys.
Cleveland, O.

United States Patent Office.

AARON HIGLEY, OF CLEVELAND, OHIO.

Letters Patent No. 113,664, dated April 11, 1871.

IMPROVEMENT IN RUBBER SPRINGS FOR WAGONS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, AARON HIGLEY, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Springs for Wagons and Carriages, of which the following is a full and complete description, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a side view of a wagon to which the spring is attached.

Figure 2 is an end view of the same.

Figure 3 is a vertical section of a detached spring.

Like letters of reference refer to like parts in the several views.

The nature of this invention relates to a spring for wagons and carriages; and

The object sought to be obtained is to provide a cheap, strong, and durable rubber spring as a substitute for the ordinary steel spring, and which shall have the elasticity of the steel, combined with the strength and flexibility of the rubber, as hereinafter more fully described.

In the drawing, fig. 1—

A A represent the wheels of the wagon.

B, the body mounted thereon upon the axles C D. Transversely upon the axles D is secured a shoe, E.

Each end of the shoe forms a cup or cell, in which is fitted and rests a thick rubber ring or spring, F.

Upon the upper end of said spring is placed a cap, G, having a downwardly-projecting flange, which receives and surrounds the upper end of said ring, as shown in fig. 3.

On the upper side of the cap G is placed the lower end of the rubber spring I.

Over the upper end of said spring is placed a deep flanged cap, J, upon which the box of the wagon directly rests.

It will be observed that the upper end of the spring I does not fill the cap, but that there is an annular space, I', between the spring and the inside of the cap, the purpose of which will presently be shown.

K, fig. 3, is a bolt, the upper end of which is secured to the box, from which it descends downward through the springs and caps and projects through the bottom of the shoe.

The projecting end is secured in the braces L M, and which is thereby prevented from lateral movement.

It will be seen, on referring to fig. 3, that the upper ring or spring I and cap J fit closely around the bolt, whereas the lower one F and cap G do not, there being considerable space between the bolt and spring,

as shown in said drawing, fig. 3, the purpose of which is to allow a swaying movement to the body or box of the wagon, and thereby render its movements free and easy.

The practical working of the above-described spring is as follows:

The wagon being loaded, the weight is borne upon the rubber springs, which, in consequence, are compressed between the caps G and J and the shoe E. Thus the spring I is compressed between the cap J and the upper part of the cap G, and which is prevented from any lateral swaying movement by being fitted snugly around the bolt.

As above said, the upper end of the spring does not fill the cap, the reason for which is to allow the spring to play vertically when the load is light.

In giving the upper end of the spring a conical shape and making it smaller in its diameter than the cap, it will more readily yield to a light weight, and will, therefore, spring more than it would do if it filled the cap; but which it will do when the weight of the load is great, causing it to fill the cap by its lateral expansion.

The lower spring F is compressed between the lower side of the cap G and the upper side of the shoe E, and which is prevented from lateral expansion by the flanges of the cap and shoe in which the spring is confined.

The flange on the shoe also serves to hold the spring in place so that they shall not move and hang against the bolt.

In thus preventing the springs from lateral expansion by means of the flanges, they are able to sustain a greater weight, and without loss of its resiliency, which, however, would not be the case were they not confined within the flanges of the caps, without which, if the compression was very great, would cause them to burst.

As before said, the lower spring F is not closely fitting around the bolt; hence, as the box may be inclined to sway in consequence of uneven roads, &c., no strain will be exerted upon the sides of the spring, as the bolt, or the lower end thereof, will not strike against the inside of the spring, nor against the hole in the shoe through which the bolt passes; hence, a free movement in every direction horizontally is allowed to the box with interruption to the vertical action of the spring.

The special advantage of a spring thus constructed and applied to a wagon is that it will sustain a heavier load than the ordinary steel elliptic spring of an equal weight.

It is also much cheaper and simpler in construction and is less liable to break down, more especially

when applied to wagons used for carrying very heavy loads.

Claim.

What I claim as my invention, and desire to secure by Letters Patent, is—

The conical cap J and spring I, with an annular space between said cap and spring, in combination

with the flanged cap G, spring F, flanged shoe E, and bolt K, with a space between said bolt and spring, constructed and arranged substantially as and for the purpose set forth.

AARON HIGLEY.

Witnesses:

W. H. BURRIDGE,
J. H. BURRIDGE.