

C. CUSTER.  
Carriage Gearing.

No. 107,668.

Patented Sept. 27, 1870.

Fig: 1.

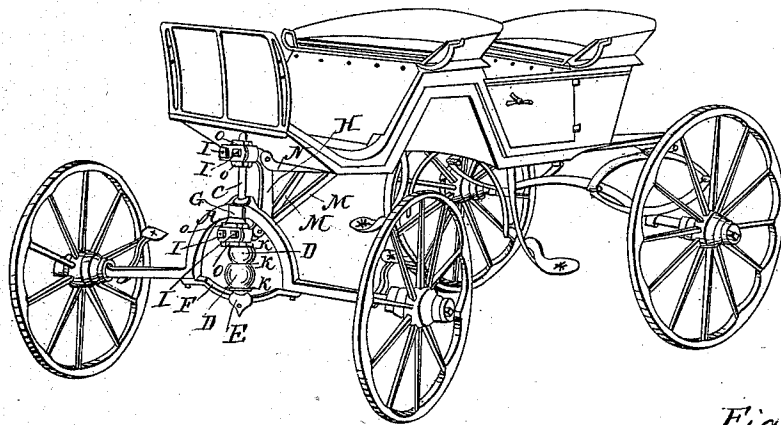


Fig: 2.

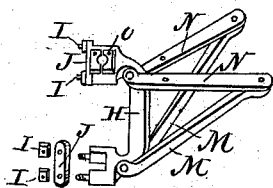


Fig: 6.

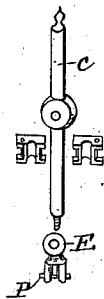


Fig: 7.



Fig: 8.



Fig: 9.



Fig: 3.

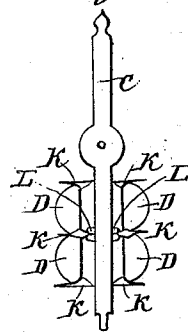


Fig: 4.

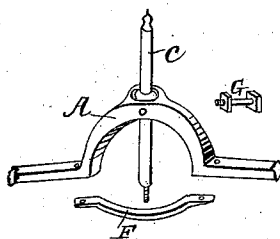
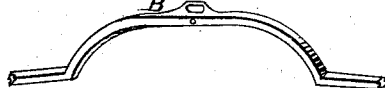


Fig: 5.



Witnesses  
D. Weber.  
John Potts

Inventor.  
Cornelius Custer

# United States Patent Office.

CORNELIUS CUSTER, OF NORRISTOWN, PENNSYLVANIA.

Letters Patent No. 107,668, dated September 27, 1870; antedated September 17, 1870.

## IMPROVEMENT IN CARRIAGE-GEARING.

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, CORNELIUS CUSTER, of Norristown, in the county of Montgomery and State of Pennsylvania, have invented a new and improved Mode of Constructing Carriage-Gearing; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The nature of my invention consists in applying an upright shaft, boxes, gum-springs, washers, braces, &c., to the front of the carriage on which the front axle turns and vibrates.

Figure 1, of the drawing, is a perspective view of the carriage.

Figure 2 is a perspective view of the braces, shackle, and boxes.

Figure 3 is an enlarged view of the upright shaft, gum-balls, &c.

Figure 4 is a perspective view of the axle and upright shaft, and lower segmental brace-slide.

Figure 5 is a perspective view of the axle, when the arch is made to extend out to the hubs of the wheels.

Figure 6 is a perspective view of the upright shaft, boxes, and forked nut.

Figure 7 is a perspective view of the gum-balls.

Figure 8 is a top view of the bevel-washer, and a leather sliding collar.

Figure 9 is an enlarged view of the leather sliding collar.

The same letters of reference refer to like parts in each figure.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I construct my carriages in any usual form, excepting the front axle and its connections to the body.

A A, fig. 1, is an arched axle. It has a slot in it at G, in which the flattened central part of the upright shaft C works on a pin or bolt, G, as shown.

C is the upright shaft, as shown also in fig. 3, fig. 4, and fig. 6.

D D are the gum spring-balls, as shown in fig. 1, fig. 3, and fig. 7. They have holes in them much larger than the diameter of the upright shaft, as shown in fig. 3 and fig. 7.

The beveled washers K K hold them in place, as shown at K K, fig. 3.

The center bevel-washer has a leather sliding collar, shown below L L, which is held in the eye of the bevel-washer by a groove cut in it on its face, as shown at L, fig. 9. This collar is used to prevent noise, and to keep the bevel-washer from rubbing the shaft.

The upper bevel-washer has bevels only on the under side, and the lower one has bevels only on the upper sides, as shown in fig. 3.

It will be seen that those bevel-washers hold the

gum-balls from rubbing the shaft, and that, as they extend out to the full diameter of the balls, or as large as the diameter of the balls will be when the pressure is on them when loaded, they give the gum-balls greater bearing on them, and enable them to carry a much greater load than they would carry without them.

The bevel-washers also keep the gum-balls from rubbing the upright shaft, which prevents them from gumming the shaft and injuring the inside of them by oil and friction.

I use one, two, or more gum-ball springs, as may be desired.

E, fig. 1 and fig. 6, is a forked nut. The lower end of the upright shaft C C is screwed or keyed firmly into the upper part of it, and the fork shown at P, fig. 6, slides on the segmental brace-slide F F, as shown in fig. 1.

P, fig. 1 and fig. 6, is a guard-bolt or pin, and it is used to keep the forked nut and upright shaft in place on the segmental brace-slide, and to hold in a leather lining in the fork of the forked nut, so as to prevent rattling and noise. This bolt also strengthens the fork by preventing it from spreading.

H, fig. 1 and fig. 2, is the shackle. It has boxes and box-caps, as shown at O O and J J, in which the upright shaft C plays up and down, and vibrates freely, so as to bear on the gum-balls and spring, and allow the front axle to turn, and the front wheels to accommodate themselves to uneven ground without disturbing the body of the carriage.

I I are the cap-nuts, as shown in those figures.

M M are the two lower brace-bars. The lower front ends of them are firmly fastened to the lower end of the shackle, and the upper back ends of them are firmly fastened to the back ends of the upper braces N N, or to the bottom of the front part of the body of the carriage.

The front ends of the upper brace-bars N N are fastened to the upper end of the shackle H, as shown in fig. 2, and the middle and back ends of them are firmly fastened to the bottom of the front part of the body of the carriage.

The upper end of the upright shaft C may be so constructed as to come up through the front part of the carriage, or not, as may be desired.

The gum spring-balls on this shaft each have two round bearing-surfaces, which press lightly on the inside of the washers K K with a light load, and that they increase their bearing-surfaces as the load increases, and that the more balls, the more elasticity is obtained.

Fig. 4 are the arched axle A, upright shaft C, axle arch-bolt and nut G, and segmental brace-slide F, which have been described above, and need no further description.

Fig. 4 is an enlarged view of my arched axle, when

it is so constructed that the arch will reach to the hubs of the wheels, or nearly so.

I construct the axle in this form so as to give room for the horse's legs, so that he can be geared back as close to the carriage as possible. I only use this mode of construction when desired.

The above description of the construction of my improved carriage-gearing is deemed sufficient.

I will now describe its operation.

The front part of the carriage-body presses on the braces N N and M M, and they press down the shackle H on the upper bevel-washer K, and it presses on the upper gum spring-ball D, and thus the pressure goes on down until the lower gum spring-ball presses on the lower bevel-washer K, and it lies on the upper end of the forked nut E, as shown in fig. 1.

As the lower box or boxes of the shackle H lies on the upper bevel-washer K, all the friction, in turning the carriage, comes on the washer, and not on the gum-ball; and, as the boxes and washer are of different metals, the friction is small compared to the usual mode of construction.

The bolt G, the forked nut E, and the segmental brace-slide F F, leave the axle free, so that the wheels of the carriage can accommodate themselves to uneven roads without disturbing the body of the carriage.

It will be seen that the above mode of construction of my improved carriage-gearing gives the front axle all its operations in a manner much superior to any yet known or used, and that it is simple, cheap, and durable, and gives a neat and pleasing appearance to the front of the carriage, and that it is much easier kept clean and in good order.

In the construction of my improved carriage-gearing I use any material which may be deemed best.

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

The upright shaft C C, attached to the center of the arch of the arched axle by a pin or bolt, G, substantially as shown and described.

CORNELIUS CUSTER.

Witnesses:

SAML. THOMAS.

D. WEBER.