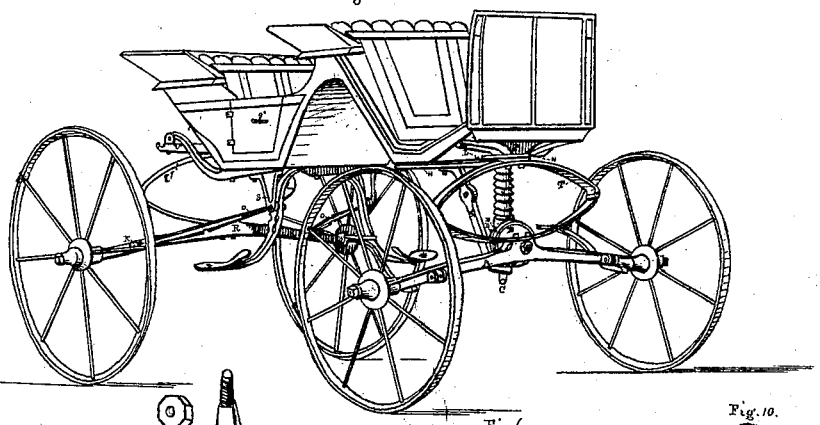
C. CUSTER.

Running Gear.

No. 112,905. Patented Mar. 21, 1871.

Fig 1st



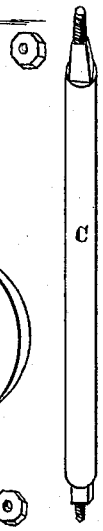



Fig 5

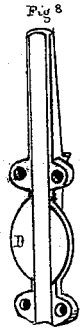



Fig 8

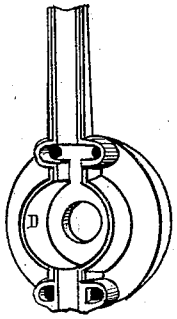



Fig 7

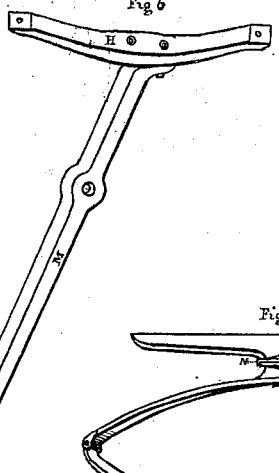



Fig 6

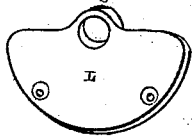



Fig. 10.

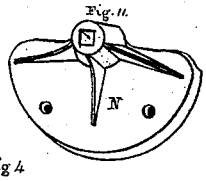



Fig. 11.

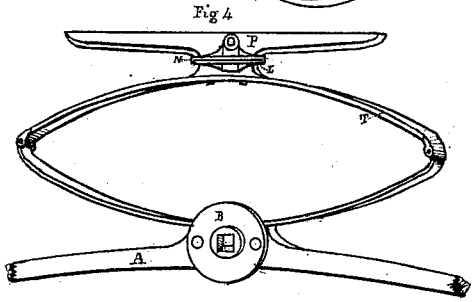



Fig 4


Fig 13.

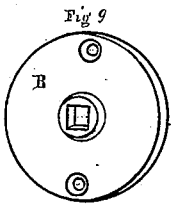



Fig 9


Fig. 12.

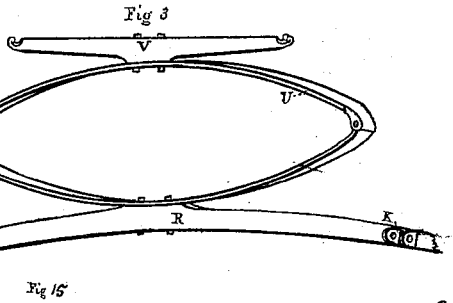



Fig 3

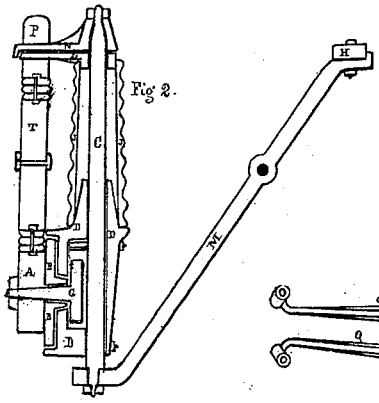



Fig 2.

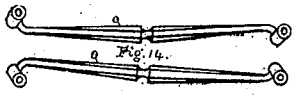



Fig. 14.

Fig 15

Witnesses
John Rudy
Jas. Thomas

Cornelius Custer

# United States Patent Office.

CORNELIUS CUSTER, OF NORRISTOWN, PENNSYLVANIA.

Letters Patent No. 112,905, dated March 21, 1871.

## IMPROVEMENT IN CARRIAGE-GEARINGS.

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

I, CORNELIUS CUSTER, of Norristown, in the county of Montgomery and State of Pennsylvania, have invented certain Improvements on my Improved Carriage-Gearing, on which a patent was allowed on March 17, 1870, and patented September 27, 1870, of which the following is a specification.

The nature of my invention consists in improving the shape of the front axle and gearing and applying back-axle-braces.

The object of my invention is to improve the gearing of my patented carriage, alluded to above.

*Description of the Accompanying Drawing.*

Figure 1 is a perspective view of the carriage.

Figure 2 is a side view of the front gearing.

Figure 3 is a front perspective view of the back gearing.

Figure 4 is a back perspective view of front gearing.

Figure 5 is the upright shaft.

Figure 6 is the brace and body-bar.

Figure 7 is a back perspective view of the upright-shaft box.

Figure 8 is a front perspective view of the upright-shaft box-lid.

Figure 9 is a back perspective view of the upright-shaft box-washer.

Figure 10 is a back perspective view of the lower half-circle washer.

Figure 11 is a top perspective view of the upper half-circle washer.

Figure 12 is a view of the upright-shaft box-bolt.

Figure 13 is a view of the upright-shaft cover.

Figure 14 is a view of the back-axle braces.

Figure 15 is a view of the front-end supports of the back-axle braces.

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

A, fig. 1, is the front axle.

B, figs. 1 and 4, is a washer, which is firmly fastened to the back part of the front axle, and the upright-shaft box D is loosely secured to it by bolt G, as shown at G, fig. 2.

The washer B and bolt G are shown enlarged, figs. 9 and 12.

The upright-shaft box D and its lid D are shown enlarged at figs. 7 and 8.

The lid D is firmly fastened to the back part of the box D by four bolts with square countersunk heads.

I construct this lid so that it can be taken off and made to close in on the box D whenever the upright shaft C wears and becomes too loose in it.

In the upper part of this box D, between the two upper bolts, I form a recess, in which I place fibrous material, which will hold oil and keep the upright shaft well oiled for a long time.

I extend the upper part of the box D and lid D as far above the oil-chamber and two upper bolts as desired, so as to give the upright shaft C as great length of bearing-surface as convenient, as shown at figs. 7 and 8 and at fig. 2. Fig. 2 is a side view, taken when cut in half.

The front elliptic spring I fasten firmly to the top of the front axle, in front of washer B, as shown at B, figs. 2 and 4.

M, fig. 2, is the front brace-bar, and

H, on top of it, is the body-bar, to which the upper end of bar M is firmly fastened, and the lower end of it is bolted to the lower end of the upright shaft C, as shown.

The half-circle washer L is firmly fastened on top of spring T, and the half-circle washer N is firmly fastened to the front body-bar P, as shown at P, figs. 2 and 4; and the upper end of the upright shaft C passes through the round hole of washer L and into the square hole of washer N, in which it is firmly fastened.

The half-circle washer L, the cover J, and the upright-shaft box and lid D all revolve on the upright shaft C when turning round, and carry the spring T and axle A round with them.

H, figs. 2 and 6, is the body-bar, to which the upper end of brace-bar M is firmly fastened. Fig. 6 is an enlarged view of it.

B, fig. 9, is an enlarged view of the front-axle washer, shown at B, figs. 2 and 4.

I construct the upright-shaft cover J, fig. 13, of gum or any other suitable material, and place a spiral spring inside of it, so as to keep it from rubbing the shaft when turning or springing up and down when the carriage is in motion.

The upright-shaft box D and lid D I construct in one piece, when desired. In this case I attach it to the washer B and axle A by a bolt, or in any other suitable manner.

R, figs. 1 and 3, is the back axle.

O O, figs. 1 and 14, are the back-axle braces.

They are pivoted to the back axle at K K, as shown at K K, fig. 3, and at K, fig. 1, and the front ends of them are pivoted to the step and hanging support V, as shown at S, figs. 1 and 15.

The spring U, fig. 3, is bolted to the top of the back axle R, and the bar V is bolted to the top of the spring U, as shown.

On the ends of the bar V the usual-shaped body-shackles are secured, as shown at *v*, fig. 1.

On short-geared carriages I connect the front ends

of the brace-bars O O to the front brace-bar at the hole, shown above M in figs. 2 and 6, so as to make them more permanent, simple, and cheap.

I insert gum blocks or other suitable material in the boxes K K of the back axle, in which the brace-bars O O are pivoted, so as to prevent rattling, and also on the front ends of them, when desired.

The operation of my improved carriage-gearing is as follows:

The load presses down the front spring, the upright shaft C, the cover J, and the bar M. When turning, the half-circle washer L, the cover J, and the upright shaft box and lid D revolve on the upright shaft C, and carry the spring T and axle A with them. When passing over uneven ground the washer B revolves slightly on the front face of the upright-shaft box D, so that the wheels may accommodate themselves to uneven ground. The load presses down the back spring U and the front ends of brace-bars O O, and, when the carriage is in motion, said parts vibrate up and down.

The advantages of the above-described carriage-gearing are in constructing carriages and business wagons in a more simple, lighter, and cheaper manner than was possible on my patent alluded to in the first part of this specification.

The above description of my improved carriage-gearing is deemed to be sufficiently plain and clear to be understood, and it will be seen that I have improved the shape of the front axle and other parts of my carriage-gearing.

I construct the different parts of my improved carriage out of any suitable material.

I claim as my invention—

1. The shaft C, shaft-box D, washer B, cover J, and brace M, all constructed and arranged substantially as shown and for the purpose set forth.

2. The braces O V, pivoted to the hind axle and to a support and the support of the carriage-step, substantially as shown and for the purpose set forth.

CORNELIUS CUSTER.

Witnesses:

SAML. THOMAS,

JOHN POTTS.