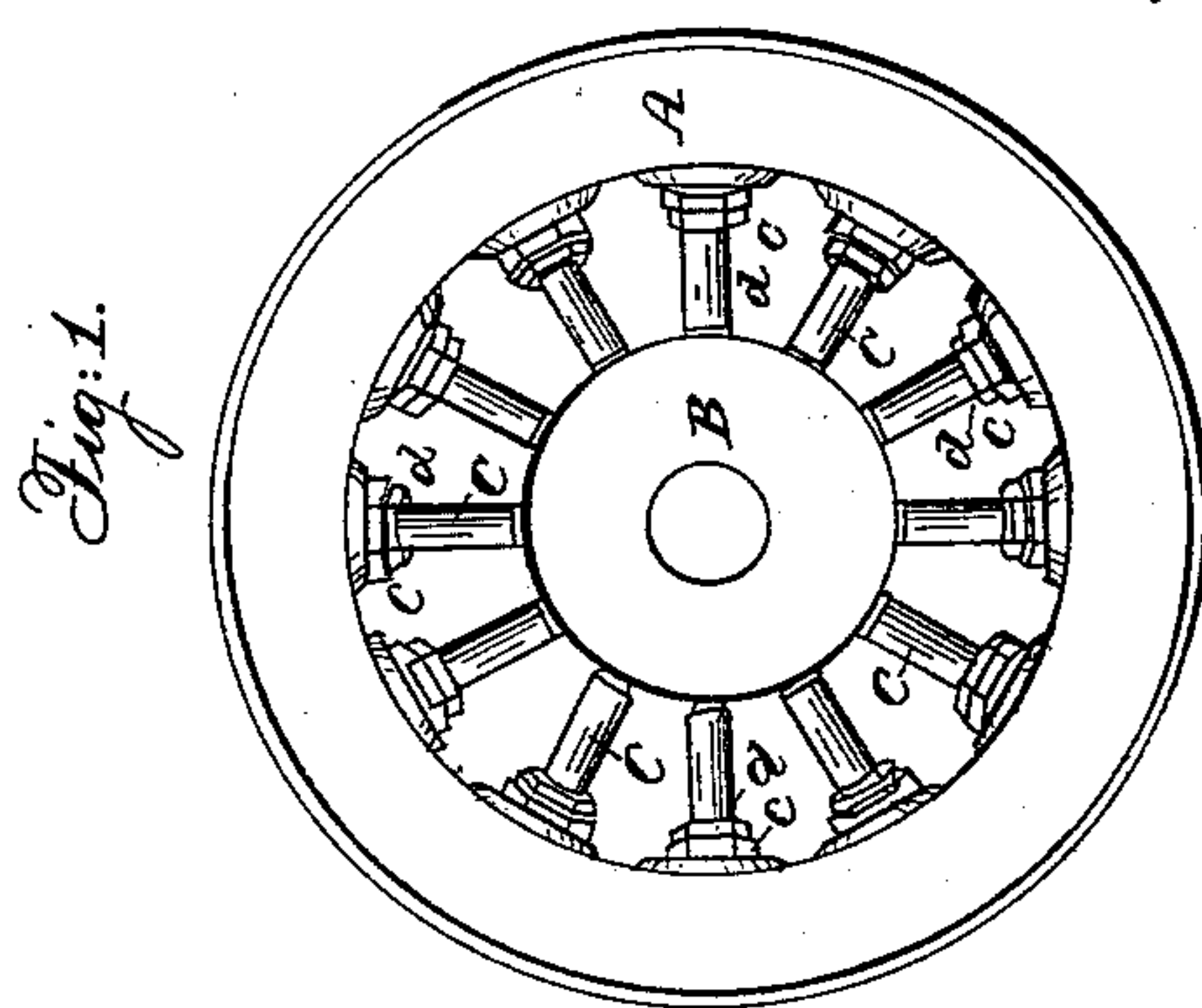
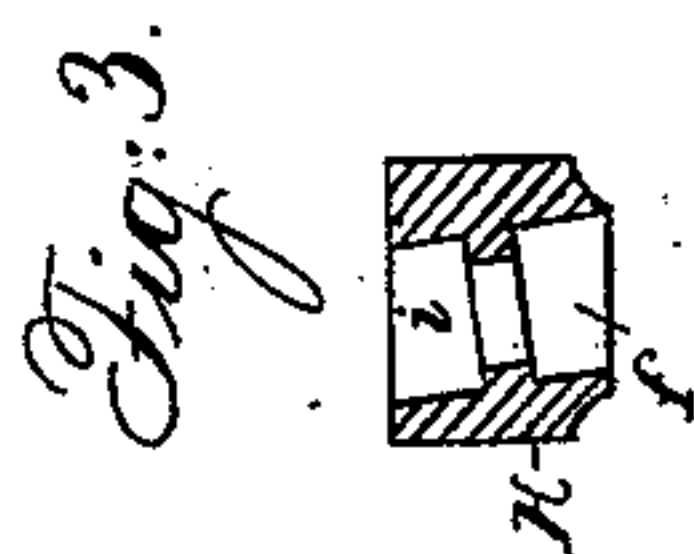
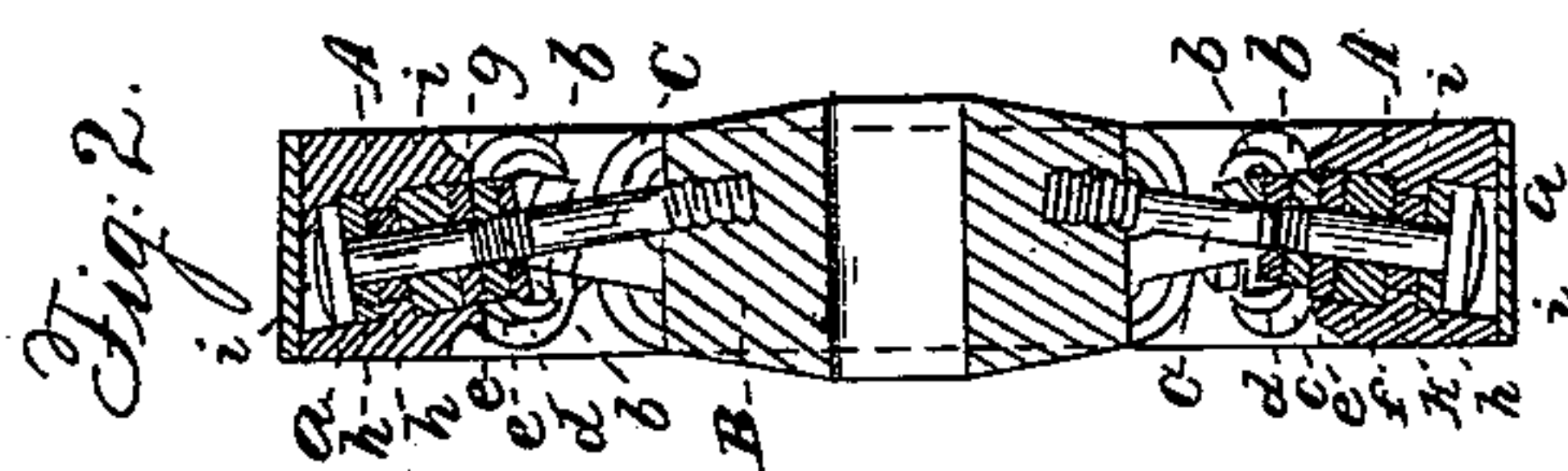


C. C. AYERS.

Wheel.

No. 61,793.

Patented Feb. 5, 1867.



Witnesses

Chas. C. Ayer  
Geo. H. Andrews, by his attorney  
Samuel N. Piper R. H. Alder

# United States Patent Office.

CHARLES C. AYER, OF CHELSEA, MASSACHUSETTS, ASSIGNOR TO HIMSELF  
AND HENRY A. BREED, OF LYNN, MASSACHUSETTS.

*Letters Patent No. 61,793, dated February 5, 1867.*

## IMPROVEMENT IN CARRIAGE-WHEELS.

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

### TO ALL PERSONS TO WHOM THESE PRESENTS SHALL COME:

Be it known that I, CHARLES C. AYER, of Chelsea, in the county of Suffolk, and State of Massachusetts, have invented a new and useful Improvement in Wheels for Carriages, whether for those used on railways or those used on common roads; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a side elevation; and

Figure 2, a transverse section of a wheel provided with my invention.

Figure 3 is a transverse section of the felloe and its spring-receiving chambers, as such appear without the springs and their spoke.

The object of my improvement is the application of each of the spokes to the felloe or rim of the wheel, so that such spoke, when above as well as when below the hub, shall be supported by an elastic spring.

In various other wheels where a spring has been applied to the spoke and in the rim or felloe, the spoke was sustained only in one direction by the spring; that is, when the spoke was below the hub, such spoke rested on the spring, but when above the hub, the head of the spoke descended or rested upon a solid instead of an elastic bearing.

My improvement, although applicable to ordinary carriage-wheels, such as are used on turnpikes and common roads, is more especially designed for the wheels of locomotive steam engines, such as are employed on railways, and is intended to prevent the injurious effects on the stokers and engineers, which result from the constant jar and concussions received by the engine or its platform when solid wheels, as ordinarily constructed, are employed. It is well known that hemorrhoids are produced by these jars or concussions, a large portion, if not a majority, of persons whose occupations require them to stand up much on railway carriages, particularly on the engines while in motion, being affected with this disease, supposed to be produced by the irritation of the rectum caused by constant jarring of its contents. My improvement also is advantageous in other respects, as it effects a great saving in the wear and tear of the machinery of the carriages as well as of the rails of the railway.

In the drawings, A denotes the felloe; B the hub; and C C C, &c., the spokes of a wheel. Each of the spokes is to be screwed into the hub, and at its outer end is to be provided with a head, *a*. Between such head and the hub, and near the felloe, the spoke is provided with a male screw, *b*, on which is screwed one or two nuts, *c d*, the inner one, *d*, being what is termed a "check-nut." On the spoke, and between the head *a* and the nut *c*, is a cylindrical annulus or follower, *e*, which is inserted or placed in a cylindrical chamber, *f*, made upward in the felloe, and being to hold an elastic spring or cylindrical vulcanized caoutchouc annulus, *g*. On the spoke, and against the head *a*, is another such spring or elastic annulus, *h*, of like diameter with the first one, and placed in a separate chamber, *i*, made in the felloe from its outer surface. These two chambers, *f* and *i*, open into each other by a cylindrical passage, *k*, of less diameter, surrounding the spoke and containing another elastic rubber annulus, *l*, to fill it and encompass the spoke. The chamber *i* is to contain the head *a* and the spring *h*, and should be long enough to allow of the necessary longitudinal play or movement of the spoke.

From the above, it will be observed that the spoke, when it may be moved in either direction longitudinally, will be sustained by a spring, and furthermore, that the intermediate spring *l* is for the purpose of affording lateral elastic support to the spoke. I would remark that the purpose of the annulus or follower *e*, and the screws and nuts adjacent thereto, is to support the spoke against the spring *g*, as well as to enable the springs to be set up as occasion may require, the annulus forming a stopper to the mouth of the inner spring chamber *f*, (in order to prevent the ingress of dust therein,) and serves to prevent the nut *c* from wearing on and twisting the spring *h*. Each spoke of the wheel is to be provided with my improvement.

I make no claim to the invention described in the United States Patent No. 48,206.

I claim the combination as well as the arrangement of the two springs *g h*, their separate chambers *f i*, the head *a*, and the bearer *e*, with the wheel felloe A, and the spoke C, applied to the hub B.

And in combination therewith, I claim the spring *l*, and its chamber *k*, arranged with respect to the spoke as set forth.

I also claim the combination and arrangement of the follower *e*, or the same and the "check-nut" *d*, with the series of annular springs and the spoke made and applied to the felloe, substantially as set forth.

CHARLES C. AYER.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.