A. J. STRAIGHT.

Vehicle Axle.

No. 106,969. Patented Aug. 30, 1870.

Fig. 1.

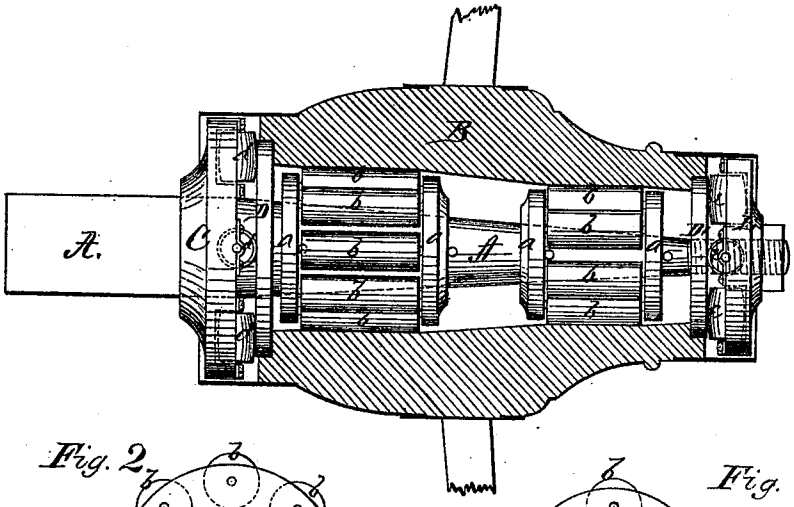


Fig. 2.

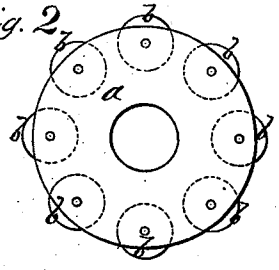


Fig. 3.

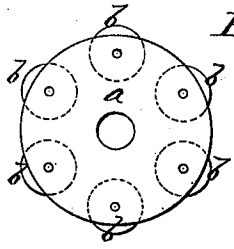


Fig. 4.

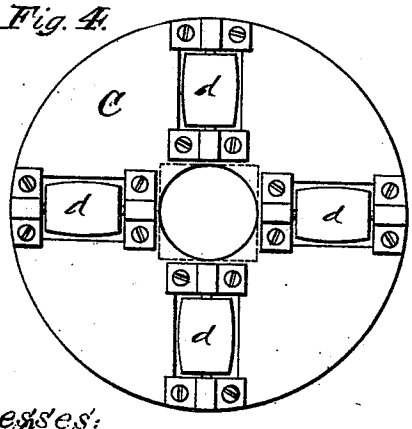
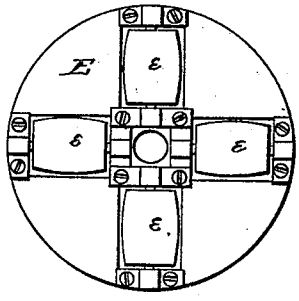


Fig. 5.



Witnesses:

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United States Patent Office.

ALBERT J. STRAIGHT, OF RICHLAND CENTRE, WISCONSIN.

Letters Patent No. 106,969, *dated August* 30, 1870.

IMPROVED AXLE FOR VEHICLES.

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, ALBERT J. STRAIGHT, of Richland Centre, in the county of Richland and State of Wisconsin, have invented certain new and useful Improvements in Axles for Vehicles, and Mode of Securing Hubs on Same; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompnying drawing, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of anti-friction rollers on axles for vehicles in such a manner that the hub of the wheel will bear against said rollers, both on the inside and at both ends.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a longitudinal vertical section of the hub, with side view of the axle and rollers;

Figures 2 and 3 are end views of the boxes of rollers; and

Figures 4 and 5 are inside views of the nuts, or their equivalents, which confine the hub on the axle.

A represents the axle of a vehicle of any description, upon which are firmly secured two sets of rings, *a a*, of unequal diameter.

Between each set of rings are placed a series of anti-friction rollers, *b b*.

Upon the axle A, at the point where the inner end of the hub B will come, is secured a disk, C, which is provided on its face with four anti-friction rollers, *d d*, radiating from the center at equal distances apart, as shown in fig. 4.

At the inner end of the hub B is firmly secured a washer, D, which bears against the anti-friction rollers *d d* on the disk C, and at the outer end of the hub is a similar washer, D′, against which another set of anti-friction rollers, *e e*, bear.

These rollers *e e* are mounted on the inner side of the nut E, in precisely the same manner as the rollers *d d* are mounted upon the disk C. This nut, with rollers, is shown in fig. 5.

The axle A is to be made of iron. The rollers and their bearings are to be made of steel.

In making a wagon, the rollers *b b* will be set out further from the axle, and be out more full, so that they will be out about half an inch, for large wagons, from the circular pieces or rings *a a*, which support the ends of the rollers.

When the rollers wear out on the under side of the axle, the pieces or rings which support their ends can be turned around so as to bring the top side down, when they will again wear as long as new, or at first.

When one set of rollers wear out, then a new set can be put on, or, if any one piece should break or give way, then another roller can be readily put in its place by any person.

The washer D′ at the outer end of the hub, that comes in contact with the end-rollers, is intended to screw into the hub, so as to prevent the oil running out.

When it is necessary to oil the wagon it can be done without taking off the wheel; only unscrew the nut E at the end, then insert the spout of the can by the side of the axle through the end of the washer D′, and pour in a sufficient amount of oil, which lubricates the whole; then put on the nut and the job is done, thus avoiding grease and dirt.

The pivots in the ends of the rollers will be about one-half inch in diameter, or proportional, according to the size of the wagon.

The hub of the wagon may be either of cast-iron, made light, or of wood, with iron boxes in each end that comes in contact with the rollers. The old fashioned wagon-boxes would answer for this purpose.

The axle will be squared a very little where the rings *a a* are, so that they will not turn upon the axle. Then they can be put on either side up.

A small screw, or other suitable device, will be put in the axle to prevent the rings *a a* from working toward the small end of the axle.

Having thus fully described my invention,

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

1. In combination with the axle A and hub B, the circular disk C, provided with the rollers *d d*, which act against a circular washer, D, all arranged on the inner end of the hub and axle, to operate as set forth.

2. In combination with the hub B and axle A, the employment upon the inner surface of the nut E of the rollers *e e*, which act against the circular washer D′, all arranged upon the outer end of the hub and axle, to operate as set forth.

3. In combination with the axle A, hub B, disk C, with rollers *d*, and nut E with rollers *e*, the disk or disks *a a*, with rollers *b b*, all constructed, arranged, and operating substantially as set forth.

In testimony that I claim the foregoing, I have hereunto set my hand this 17th day of February, 1870.

ALBERT J. STRAIGHT.

Witnesses:

O. F. BLACK,

A. H. KROUSKOP.