

No. 832,360

PATENTED OCT. 2, 1906.

C. E. BILLIN.
TRUCK AXLE.

APPLICATION FILED MAR. 13, 1905.

Fig. 1.

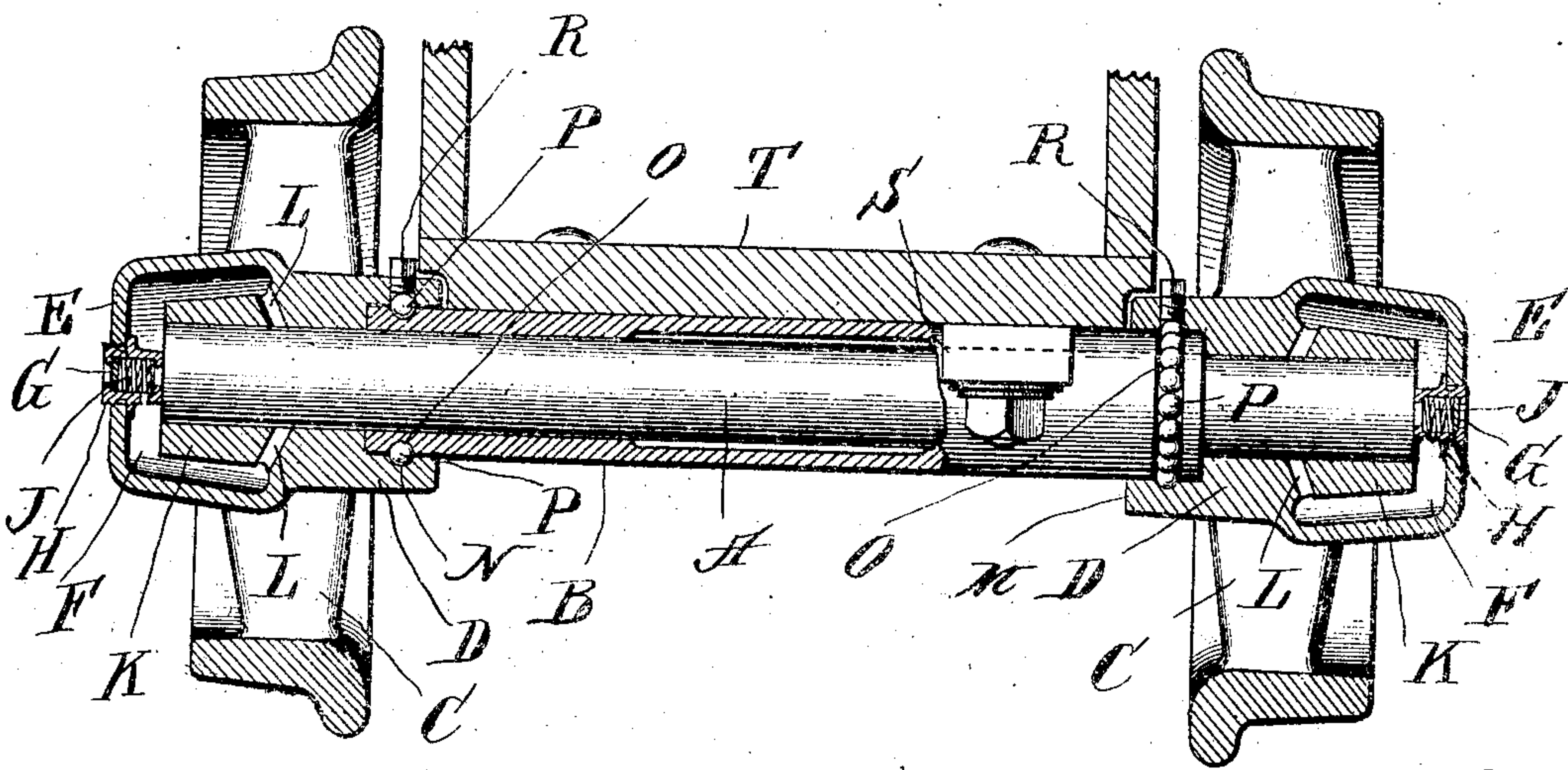
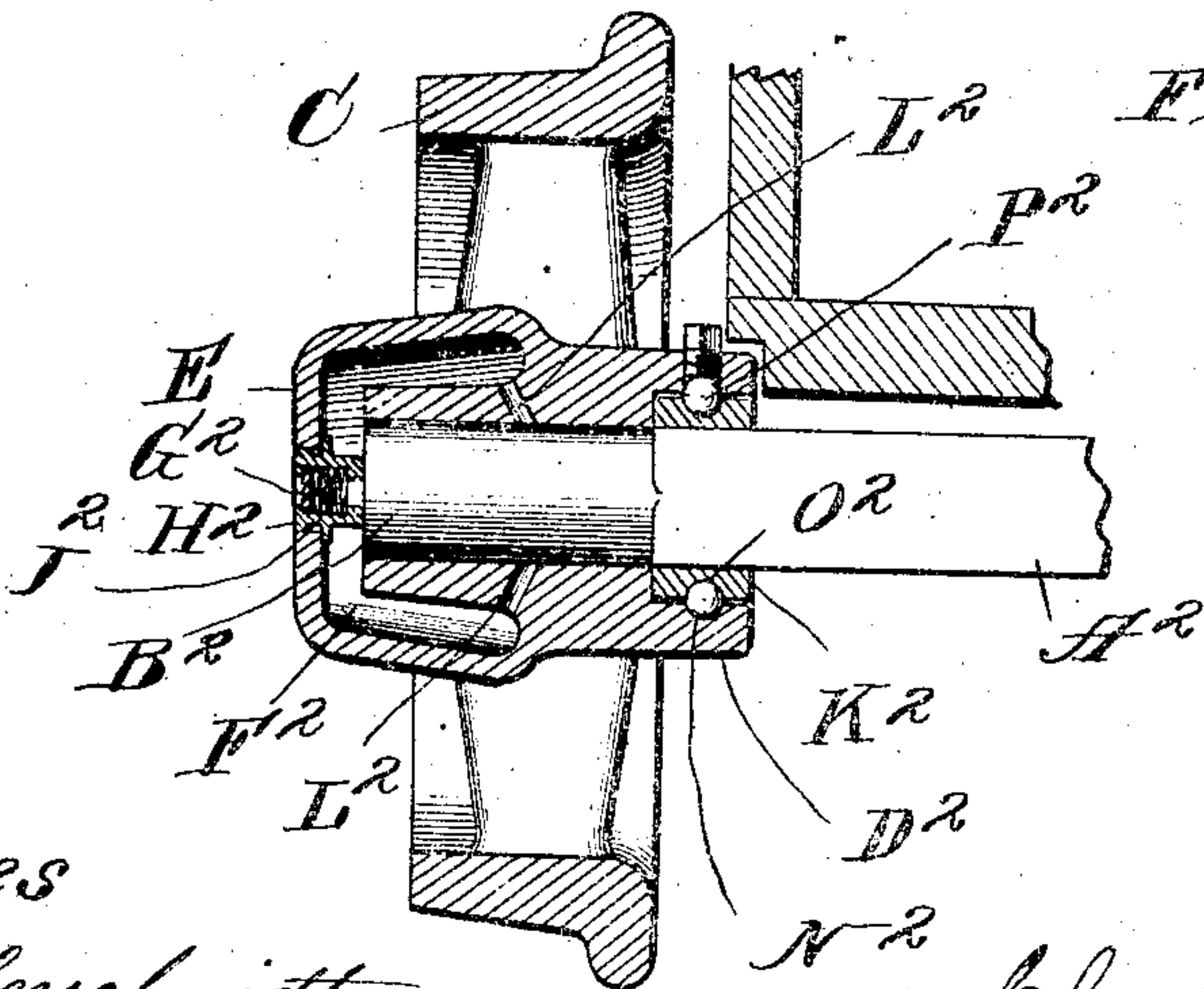


Fig. 2



Witnesses

GA Paulerschmitt

Chas. H. Seem

Inventor:

Charles E. Billin

By Brown & Darby

Attys.

UNITED STATES PATENT OFFICE.

CHARLES E. BILLIN, OF CHICAGO, ILLINOIS.

TRUCK-AXLE.

No. 832,860.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed March 13, 1905. Serial No. 249,754.

To all whom it may concern:

Be it known that I, CHARLES E. BILLIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Truck-Axles, of which the following is a specification.

This invention relates to truck-axles.

The object of the invention is to provide a truck-axle of simple construction and arrangement and which is strong, durable, and economical in manufacture.

The invention consists, substantially, in the construction, combination, location, and arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Figure 1 of the accompanying drawings is a longitudinal sectional view through a truck-axle construction embodying the principles of my invention. Fig. 2 is a broken detail view in section, showing a slightly-modified construction embodying my invention.

Referring to the accompanying drawings, reference-sign A designates the axle, which is in the form of a solid bar and of any desired size or shape in transverse section, a cylindrical bar being shown as an exemplification. Loosely mounted upon the axle proper is a sleeve B, shorter in length than the axle, the axle merely passing loosely through such sleeve, the ends of the axle projecting beyond the ends of the sleeve. Upon the projecting ends of the axle are mounted the wheels C. These may be of any suitable or desired type of wheel construction, and while I have shown wheels of the spoke pattern I do not desire to be limited or restricted thereto. Each wheel is provided with a hub portion D to receive the projecting end of the axle and with a cap E, which is cored out, as indicated at F, to form an oil-chamber, the cap fitting over the end of the axle, and through this cap may be provided an oil-passage for the introduction of oil to the oil-chamber. This passage may be normally closed in any convenient manner—as, for instance, by means of a washer G, held in a plug H and yieldingly pressed, by means of a spring J, into closing relation with respect to the oil-passage. A solid portion K of the hub D projects or extends into the chamber F, and through this solid portion of the hub I form ducts or passages L, extending from the oil-chamber F to the bearing-surface of

the axle. The wheels may be held upon the axle ends in any suitable or convenient manner. I have shown a simple arrangement wherein an inner flange M of the wheel-hub extends over or surrounds the end of the sleeve B, and in the contacting interior surface of the flange extension M of each wheel and the exterior peripheral surface of the adjacent end of the sleeve B, I provide cooperating and corresponding circular grooves N O, which when brought into registering relation form a raceway to receive steel balls P, which when inserted in the raceway through a passage or opening R, which communicates therewith, are partially seated in the groove N, formed in the inner surface of the flange M, and also in groove O, formed in the peripheral surface of the adjacent end of sleeve B, thereby forming a most simple, inexpensive, and efficient retaining device for retaining the wheels upon the projecting axle ends and in which said fastening device is entirely housed and protected. The sleeve B may be provided with suitable projecting lugs S, forming means for support for the truck or car-body T, or the car-body or truck-frame may be supported in any other suitable, simple, or convenient manner.

In Fig. 2 I have shown a modified arrangement wherein instead of employing a cylindrical axle and an inclosing sleeve therefor I provide an axle A², which may be square or other shape in cross-section, but provided with a cylindrical end portion B², on which the wheel C is journaled, the cap portion E of the hub of the wheel inclosing the end of the journal B² of the axle, the hub portion E being provided with the cored-out chamber F² and the oil-passages L² and the construction of plug H², washer G², and spring J² similar in all respects to the construction above described. However, instead of the wheel being retained by the ball construction by means of a raceway formed partially in the flange D of the wheel-hub and the exterior surface of the sleeve B, and in which raceway the balls P are inserted, as in the construction above described and as shown in Fig. 1, I provide the axle A² with a collar or enlargement K², which is surrounded or inclosed by a flange D² of the wheel, the raceway being formed partially in the exterior surface of the collar K² and the interior surface of the flange D² of the wheel-hub, the balls P² being inserted in such raceway, as will be plain and apparent. In this con-

struction of course there is no axial rotation of the axle, the wheel revolving upon the journal end of the axle being retained by reason of the balls P^2 being partially seated in the groove O^2 , formed in the exterior surface of the collar K^2 , and coöperating groove N^2 , formed in the interior surface of the flange of the wheel-hub.

From the foregoing description it will be seen that I provide an exceedingly simple economical construction with few parts and which does not require the nicety of machine-finish of the various parts. Efficient provision is made for lubricating the bearings of the wheels upon the axle. The structure is strong and durable, the axle proper being preferably a solid steel bar, and the sleeve B being of iron the wear is reduced to a minimum.

It is obvious that the design of the various parts may be altered or varied to suit any requirement and that variations and changes in the details of construction might readily occur to persons skilled in the art and still fall within the spirit and scope of my invention.

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

1. The combination with an axle, of a sleeve longitudinally through which the axle extends, the ends of the axle projecting beyond the ends of the sleeve, wheels provided with hubs forming bearings to receive the projecting axle ends and formed with a chambered inclosing cap for the ends of the axle and with a flange to receive the adjacent ends of the sleeve, and a raceway formed partially on the inner surface of said flange and the outer surface of said sleeve, a passage

through the hub and communicating with the raceway, and retaining-balls received within said raceway through the passage and being entirely housed therein.

2. The combination of a sleeve, an axle extending longitudinally through said sleeve, and having its ends projecting beyond the ends of said sleeve, wheels mounted upon the projecting ends of said axle, each wheel having a solid hub portion to form a bearing to receive the end of the axle, and an inclosing cap to form a chamber, the solid portion of said hub having ducts or passages leading from said chamber to the bearing to the axle end, said hub also having a flange to engage over the end of said sleeve, and means interposed between the bearing-surfaces of said flange and sleeve for retaining the wheel upon the axle.

3. The combination of a sleeve having an exterior circumferential groove at each end thereof, an axle extending longitudinally through said sleeve and having its ends projecting beyond the ends of said sleeve, a wheel mounted upon each end of said axle, each wheel having a bored hub and provided on one face of such hub with an inclosing cap forming a chamber and on the other face with a flange, said flange engaging the end of the sleeve and having a corresponding interior circumferential groove formed therein, and means seated in said grooves for retaining said wheel upon the axle end.

In witness whereof I have hereunto set my hand, this 8th day of March, 1905, in the presence of the subscribing witnesses.

CHARLES E. BILLIN.

Witnesses:

C. H. SEEM,

E. C. SEMPLE.