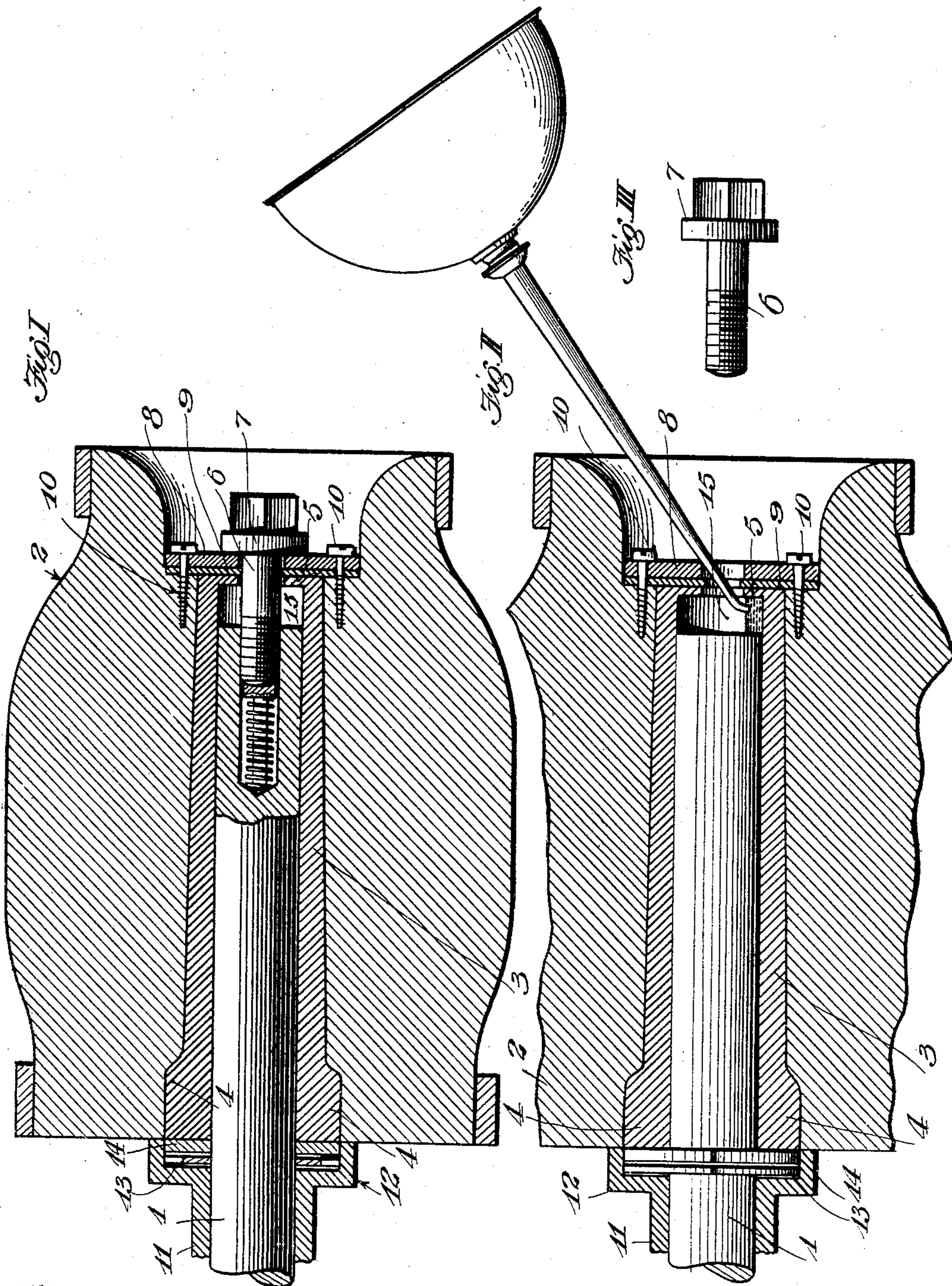


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P. LE SUEUR.  
VEHICLE AXLE.

APPLICATION FILED OCT. 28, 1903.



WITNESSES

*Edmund A. Starnes*

*G. T. Hackley*

INVENTOR  
PHILIP LE SUEUR

*by* *Thomson Bros.*  
Attys.

# UNITED STATES PATENT OFFICE.

PHILIP LE SUEUR, OF CALABASAS, CALIFORNIA.

## VEHICLE-AXLE.

SPECIFICATION forming part of Letters Patent No. 783,056, dated February 21, 1905.

Application filed October 28, 1903. Serial No. 178,835.

*To all whom it may concern:*

Be it known that I, PHILIP LE SUEUR, a citizen of the United States, residing at Calabasas, in the county of Los Angeles and State of California, have invented a new and useful Vehicle-Axle, of which the following is a specification.

The objects of the invention are to provide a device of the character described which will be practically dust-proof, simple in construction, economical of manufacture, and durable in use.

Another object is to provide a novel form of plate for taking the thrust or chuck of the wheel.

Another object is to provide a novel bolt-stop.

The accompanying drawings illustrate the invention, and, referring to the same, Figure 1 is a horizontal section taken through the device, the vehicle-axle being shown in elevation. Fig. II is a similar view with the retaining-bolt removed, and an oil-can is shown to illustrate the manner of introducing oil to the interior of the axle-box. Fig. III is a detail view of the retaining-bolt.

1 designates the vehicle-axle, the outer end of which is drilled and tapped, as shown.

2 designates the hub, which receives an axle-box 3, preferably formed tapering, as shown, and provided with radial enlargements 4 to prevent the turning of the box in the hub. The axle-box 3 is a blind casting forming a semiblind axle-box, its outer end having a flange 5, which is drilled centrally to receive the retaining-bolt 6, the latter screwing into the end of the axle 1 and having a flanged head 7, there being a bearing-plate 8 and a leather washer 9 interposed between the flange of the head 7 and the flange 5 on the end of the axle-box. The bearing-plate 8 and washer 9 are fastened to the hub 2 by means of bolts 10, and said plate and washer receive the chuck or end thrust of the wheel.

As clearly shown in the drawings, the perforation through the bearing-plate 8 is slightly larger than the diameter of the retaining-bolt 6, and the hole in the end of the axle-box is also somewhat larger, so that as the hub rotates there is no friction between the smooth

elongated wearing-surface of the shank of the bolt 6 and the bearing plate or flange 5, the wear occurring on the outer face of the bearing-plate and inner face of the flange of the head 7, the bearing-plate 8 acting as the hub-retainer, taking the end thrust of the hub relative to the axle. The washer 9 is preferably constructed of leather or other packing material easily replaceable, and the perforation is sufficiently small to be completely filled by the bolt 6, thus preventing the escape of oil and ingress of dust or grit.

11 designates a shoulder for the axle 1. The shoulder is provided with a recessed flange 12, which houses spring-washers 13 and 14, which give a resilient bearing against the inner end of the axle-box 4. Thus when the wear between the axle and axle-box is sufficient to allow chucking of the wheel the oil is prevented from being forced out by the chucking action, for the reason that the spring-washers are at all times closely pressed against the inner end of the axle-box and also for the reason that the washers closely fit around the axle. The spring-washer also prevents end play, shaking, or rattling of the hub on the axle and causes the hub to be forced outwardly, bringing the bearing-plate 8 into close contact with the head 7. The shoulder 11 may be adjustable on the axle and, together with the spring-washers 13 and 14, is shown in detail and claimed in another application of mine, filed October 28, 1903, Serial No. 178,834.

It will be observed that the outer end of the axle 1 terminates short of the end of the solid cast axle-box 3, thereby forming an oil-chamber 15. The oil-chamber 15 serves as a reservoir into which oil or other lubricator compound may be introduced and which retains the oil, a supply of oil therefrom being automatically furnished to the smooth cylindrical wearing-faces of the axle. The end of the axle is drilled beyond the end of the retaining-bolt, and a bolt-stop 16, having a concave head, is interposed between the end of the retaining-bolt and the bottom of the hole in the axle, there being a coil-spring 17 encircling the shank of the retaining-bolt and resting against the bottom of the hole in the axle,

said coil-spring being longer than the bolt-stop. The bolt-stop limits the inward screwing of the retaining-bolt, and the spring 17 presses the head of the bolt-stop against the end of the retaining-bolt and causes the threads of the bolt to be tightly squeezed in the threaded axle end and also sets up a frictional action on the end of the retaining-bolt, thereby preventing accidental unscrewing and loss of the retaining-bolt.

When the bolt 6 is unscrewed from the axle and withdrawn from the hub, it allows the spout of an oil-can to be inserted into the oil-chamber or allows the introduction of hard grease into the oil-chamber, and after the desired amount of oil has been put into the chamber the bolt 6 is replaced, thus closing the oil-chamber. The object of the elongated smooth wearing-surface on the bolt is to allow for the necessary slight chucking action of the wheel and also to permit of a close fit of the packing-washer around the bolt. This could not be done if the bolt were threaded its entire length.

While I have shown and described the preferred construction of this invention, it is evident that various changes might be made therein without departing from the scope of the claims.

What I claim is—

1. In combination, an axle, an axle-box thereon, a hub carried by the axle-box, a bearing-plate on said hub, the outer end of said axle terminating short of the end of the axle-box and being drilled and threaded, a solid retaining-bolt passing through said bearing-plate on the hub closing the entrance and traversing the chamber formed at the end of the axle for the reception of lubricants, and engaging with the threads in the axle, and a bolt-stop between the bolt and the bottom of the hole in the axle.

2. In combination, an axle, an axle-box thereon, a hub carried by the axle-box, a bearing-plate on said hub having a designedly large orifice, the outer end of said axle terminating short of the end of the axle-box and being drilled and threaded, a solid retaining-bolt passing through said bearing-plate on the hub and through the orifice in the end of semiblind journal-box traversing the oil-chamber formed at the end of the axle, engaging with the threads in the axle, and a bolt-stop between the bolt and the bottom of the hole in the axle, the end of the retaining-bolt being convex, said bolt-stop having a concave head which receives the end of said retaining-bolt.

3. In combination, an axle, an axle-box thereon, a hub carried by the axle-box, a bearing-plate on said hub, the outer end of said axle terminating short of the end of the axle-box and being drilled and threaded, a retaining-bolt passing through said bearing-plate on the hub traversing the space for oil formed at the end of the axle and engaging with the threads in the axle, and a bolt-stop between the bolt and the bottom of the hole in the axle, the end of the retaining-bolt being convex, said bolt-stop having a concave head which receives the end of said retaining-bolt, and a coiled spring encircling said bolt-stop interposed between the head of said stop and the bottom of the hole in the end of the axle.

4. In combination, an axle, an axle-box thereon, a hub carried by the axle-box, a bearing-plate on said hub, the outer end of said axle terminating short of the end of the axle and being drilled and threaded, a solid retaining-bolt passing through said bearing-plate on the hub and through the space at the end of the axle formed for the reception of lubricants and engaging with the threads in the axle, and a bolt-stop between the bolt and the bottom of the hole in the axle, and means for frictionally holding said retaining-bolt from turning.

5. In combination, an axle, an axle-box thereon, a hub carried by the axle-box, a bearing-plate on said hub with a designedly large hole allowing the introduction of hard grease, the outer end of said axle being drilled and threaded, a solid retaining-bolt passing through said bearing-plate and through the designedly large hole in the end of the semiblind journal-box substantially closing the same and traversing the chamber for the reception of lubricants and engaging with the threads of the axle, and a bolt-stop between the bolt and the bottom of the hole in the axle, the outer end of said axle-box having an inwardly-directed flange and a plate composed of suitable packing material resting between said flange and said bearing-plate on the hub, said packing closely fitting around the retaining-bolt.

In testimony whereof I have hereunto signed my name, in the presence of two subscribing witnesses, at Los Angeles, in the county of Los Angeles and State of California, this 21st day of October, 1903.

PHILIP LE SUEUR.

Witnesses:

GEORGE T. HACKLEY,  
JULIA TOWNSEND.