





# UNITED STATES PATENT OFFICE.

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## VEHICLE-AXLE.

No. 828,179.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, ROBERT H. BERKSTRESSER, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Vehicle-Axles, of which the following is a specification.

My invention relates to vehicle-axles, more particularly vehicle-axles constructed with a view of being readily lubricated without the necessity of removing wheels from their spindles; and it has for its object to provide a simple and compact axle of the type mentioned and one which may be depended upon to exclude dust or grit and preclude the possibility of the same finding its way, with the lubricant, to a point between the spindle and the box thereon.

To the attainment of the foregoing object the invention consists in the peculiar construction, novel combination, and adaptation of parts hereinafter described, and particularly pointed out in the claims appended.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of an axle constructed in accordance with my invention. Fig. 2 is a longitudinal central sectional view of the same. Fig. 3 is a perspective view of the peculiar nut constituting part of my improvement removed. Fig. 4 is a perspective view of the cap for normally closing the lubricant-duct and preventing dust, grit, and the like getting into the axle.

Similar numerals designate corresponding parts in all of the views of the drawings, referring to which—

1 is the body of the axle, and 2 the spindle, which is preferably, though not necessarily, integral with the body, as illustrated. In addition to the usual inner shouldered portion 3 the spindle 2 is provided with an outer reduced and threaded portion 4 and a nipple 5, the latter being reduced as compared with the portion 4 and extending outwardly therefrom and being exteriorly threaded, as indicated by 6, and interiorly threaded, as indicated by 7, for purposes presently set forth. The said spindle 2 is also provided with a longitudinal groove 8, disposed in its outer side, and a longitudinal central duct or bore 9, which latter communicates at one end with and extends from the inner end of the nipple 5 and is provided at its inner end with a conduit 10, which extends to and commu-

nicates with the groove 8, as illustrated in Fig. 2.

11 is a box of the usual construction, arranged and adapted to turn on the spindle 2.

12 is a nut mounted on the threaded portion 4 of spindle 2 and having the usual appurtenances common to vehicle-nuts, including packing 12<sup>b</sup>, arranged over the reduced and threaded portion 4 of the spindle 2 and between the box 11 and the nut 12, and 13 is the cap applied to the nipple 5 of the spindle and designed to normally close the duct or bore 9 and exclude dust, grit, and the like from the axle. The nut 12 is peculiar in that it is provided in its outer side or face with a circular concavity 12<sup>a</sup>. This concavity has a central opening 14, which communicates with the threaded bore of the nut for a purpose which will presently be made clear. The cap 13 is circular in cross-section, and in addition to the interior thread 13<sup>a</sup> and the knurled or roughened outer portion 13<sup>b</sup> it has an exterior wing or flange 13<sup>m</sup>. The inner side or face of this wing or flange 13<sup>m</sup> is rounded or convex, as indicated by 13<sup>n</sup>, this in order to enable it to fit snug against the concavity 12<sup>a</sup> of nut 12 when the cap 13 is screwed on the nipple 5, and thereby preclude the possibility of dust or grit finding its way into the axle through the space between the cap and the nut. It will also be noticed that the cap 13 rests in the concavity 12<sup>a</sup> of the nut, and consequently the nut serves to protect the cap against blows and removes the liability of the cap being broken off or battered out of shape while the axle is in use.

In the practical use of my novel axle the parts are relatively arranged, as shown, and hence it will be apparent that the cap 13 alone will retain lubricant in the duct or bore 9, and thereby assure proper lubrication of the outer side of the spindle 2 and the inner side of the box 11, also that the said cap 13, or rather the wing or flange 13<sup>m</sup> thereof, cooperating with the concavity 12<sup>a</sup> in the face or outer side of the nut 12, will effectually prevent dust and grit from entering between the spindle and nut and finding its way into the lubricant and passing with the latter to a point between the spindle and the box. The flange 13<sup>m</sup> of the cap 13 is preferably thin and resilient, as illustrated, so that it will be placed under slight tension and tightly crowded against the concavity 12<sup>a</sup> in the nut when the cap 13 is turned up on the nipple of the spindle 2. When it is de-



sirable to replenish the supply of lubricant in the duct or bore 9 of the spindle 2, all that is necessary is to turn the cap 13 off the nipple 5, attach a suitable lubricant-forcing device to the said nipple, preferably by screwing one end of the device into the nipple, and actuate the device until the duct or bore 9 is fully charged with lubricant. With this done the lubricant-forcing device, which may be of any construction suitable to the purpose, is detached, and the cap 13 is replaced on the nipple 5 and screwed up until the flange or wing 13<sup>m</sup> bears tight against the concavity 12<sup>a</sup> in the face or outer side of the nut 12 for the purpose before set forth.

It will be apparent from the foregoing that my improvements are calculated to materially prolong the usefulness of an axle, and yet do not add materially to the cost of the axle or render the same cumbersome in appearance.

I claim—

1. In an axle, the combination of a spindle having a longitudinal duct or bore and a conduit extending from said duct or bore to its outer side and also having a reduced and threaded outer portion and an exteriorly-threaded nipple reduced as compared with said portion and extending outwardly therefrom and communicating with the duct or bore, a nut having a threaded bore receiving the threaded portion of the spindle, and also having a concavity in its outer side or face and an interiorly-threaded cap screwed on the nipple of the spindle and resting in the concavity of the nut.

2. In an axle, the combination of a spindle having a longitudinal duct or bore and a conduit extending from said duct or bore to its outer side and also having a reduced and threaded outer portion and an exteriorly-threaded nipple reduced as compared with said portion and extending outwardly therefrom and communicating with the duct or bore, a nut having a threaded bore receiving the threaded portion of the spindle, and also having a circular concavity in its outer side or face, and an interiorly-threaded cap screwed on the nipple of the spindle and nor-

mally resting in the concavity of the nut and having a wing or flange the inner side of which is convex, whereby it is adapted to snugly fit against the concavity of the nut.

3. In an axle, the combination of a spindle having a longitudinal duct or bore and a conduit extending from said duct or bore to its outer side and also having a reduced and threaded outer portion and an exteriorly-threaded nipple reduced as compared with said portion and extending outwardly therefrom and communicating with the duct or bore, a nut having a threaded bore receiving the threaded portion of the spindle, and also having a circular concavity in its outer side or face, and an interiorly-threaded cap screwed on the nipple of the spindle and normally resting in the concavity of the nut and having a thin and resilient wing or flange the inner side of which is convex to fit the concavity in the nut.

4. In an axle, the combination of a spindle having a reduced and threaded outer portion and a nipple extending outwardly therefrom; said spindle having a duct or bore and a conduit in communication therewith, a nut having a threaded bore receiving the threaded portion of the spindle, and also having a concavity in its outer side or face, and a cap secured on the nipple of the spindle and resting in the concavity of the nut.

5. In an axle, the combination of a spindle having a reduced and threaded outer portion and a nipple extending outwardly therefrom; said spindle having a duct or bore and a conduit in communication therewith, a nut having a threaded bore receiving the threaded portion of the spindle and having a concavity in its outer side or face, a cap secured on the nipple of the spindle, and a wing or flange carried by the cap and arranged to snugly fit against the concavity of the nut.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT H. BERKSTRESSER.

Witnesses:

J. T. FITZPATRICK,

JACOB E. WEAVER.