

No. 664,611.

Patented Dec. 25, 1900.

J. G. ANDERSON.  
VEHICLE AXLE AND BOX.

(Application filed Sept. 6, 1900.)

(No Model.)

Fig. 1

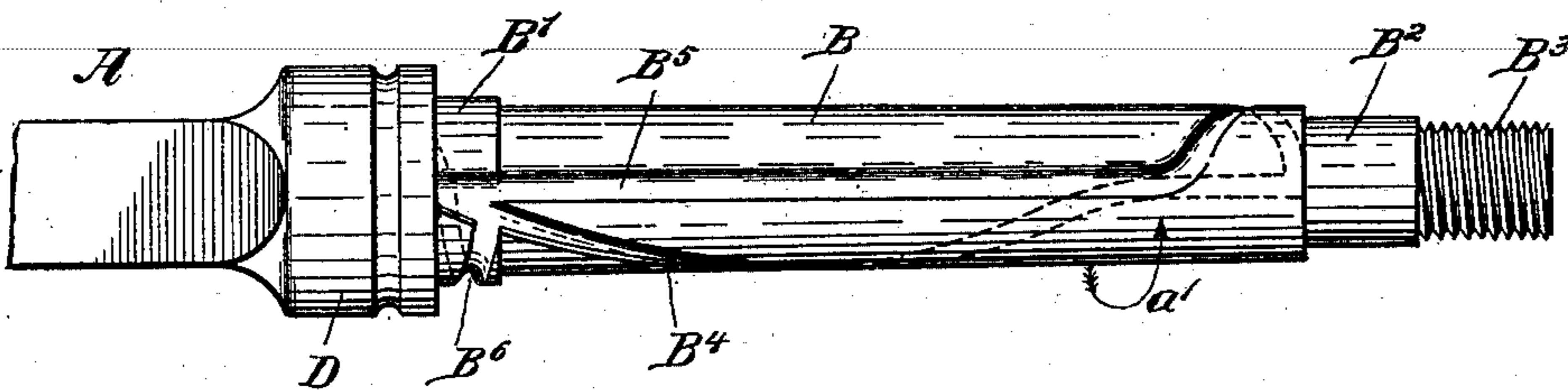


Fig. 2

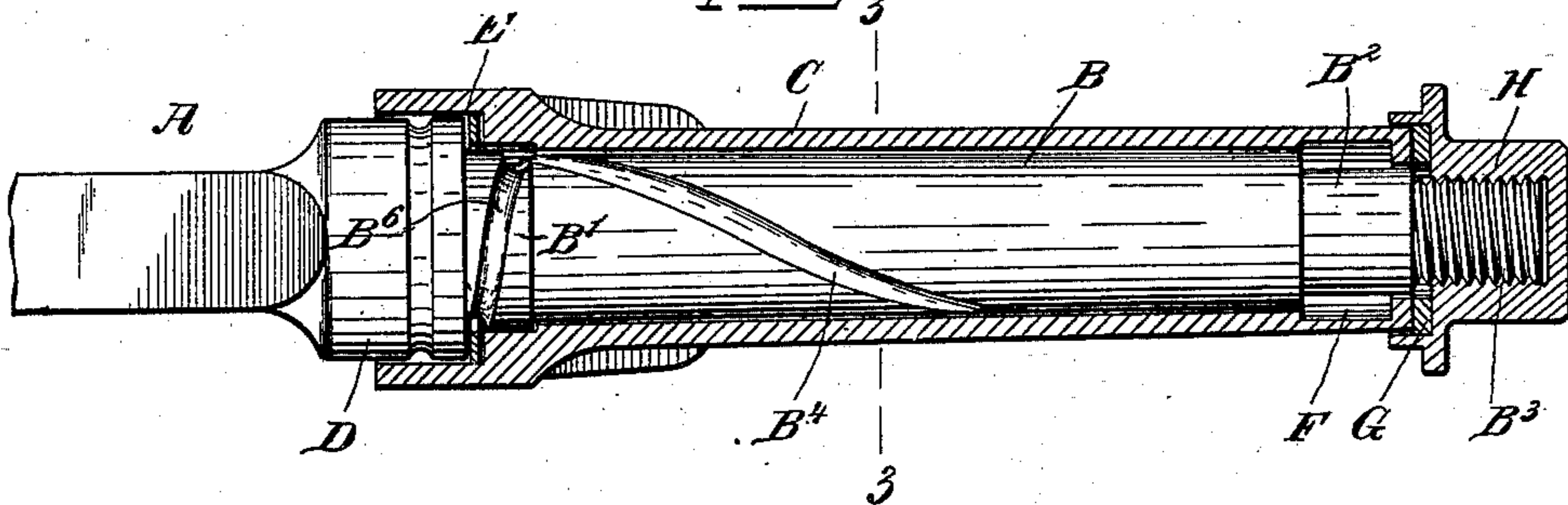
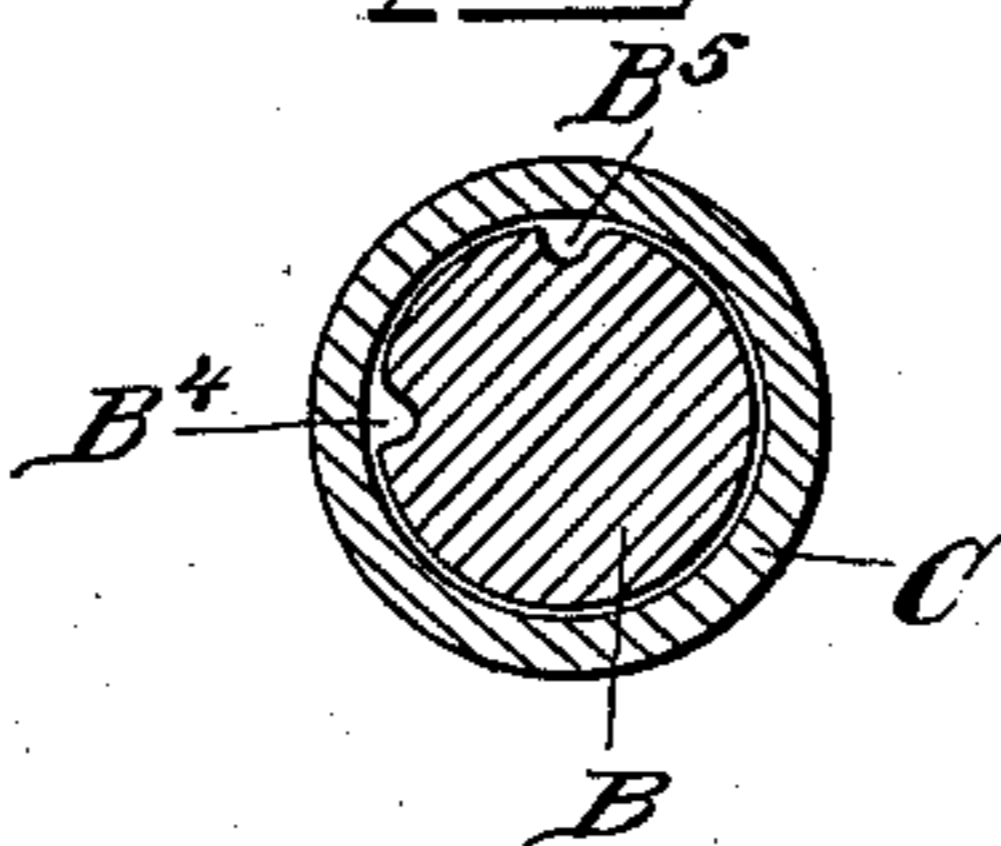


Fig. 3



WITNESSES:

*J. A. Bropley*  
*Herb. Hoster*

INVENTOR

*John G. Anderson.*

BY

*Munn*

ATTORNEYS

# UNITED STATES PATENT OFFICE.

JOHN GARY ANDERSON, OF ROCK HILL, SOUTH CAROLINA.

## VEHICLE AXLE AND BOX.

SPECIFICATION forming part of Letters Patent No. 664,611, dated December 25, 1900.

Application filed September 6, 1900. Serial No. 29,159. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN GARY ANDERSON, a citizen of the United States, and a resident of Rock Hill, in the county of York and State of South Carolina, have invented a new and Improved Vehicle Axle and Box, of which the following is a full, clear, and exact description.

The invention relates to a vehicle axle and box, such as shown and described in the Letters Patent of the United States No. 651,225, granted to me on June 5, 1900.

The object of the present invention is to provide a new and improved axle and box arranged to insure free circulation of the lubricant and a consequent proper lubrication of the spindle and at the same time prevent the lubricant from drying up or becoming gummy.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of one end of the vehicle-axle. Fig. 2 is a longitudinal sectional side elevation of the axle and box in position, and Fig. 3 is a transverse section of the same on the line 3 3 in Fig. 2.

The axle A is provided at each end with a spindle B, fitting into a box C, and having a head D between the spindle and the axle proper, said head abutting against a washer E, arranged in the box C, as is plainly indicated in Fig. 2. The spindle B is formed at the inner end with an enlargement B', and at the outer end of the spindle is formed a reduced portion B<sup>2</sup>, partly surrounded by an oil-chamber F, adapted to contain the lubricant, said oil-chamber being preferably formed in the manner more fully shown and described in the patent above referred to, so that further description of the same is not deemed necessary. A washer G is placed against the outer face of the outer wall of the chamber F and is engaged by a nut H, screwing on the threaded end B<sup>3</sup> of the spindle, the same as shown and described in the above-mentioned Letters Patent.

The lubricant from the oil-chamber F passes into the outer end of a feed-groove B<sup>4</sup>, extending spirally on the spindle B from the bottom thereof at the forward end to the top of the rear or inner end, as is plainly indicated in Figs. 1 and 2, said inner end of the groove B<sup>4</sup> terminating at the head D. (See Fig. 1.) A top groove B<sup>5</sup> extends partly from the head D along the top of the spindle toward the outer end and then curves downwardly and forwardly and opens into the oil-chamber F at the bottom thereof, adjacent to the beginning of the spiral feed-groove B<sup>4</sup>. A groove B<sup>6</sup> for preventing leakage of lubricant at the head D is formed in the enlargement B' and extends from the groove B<sup>4</sup> partly around the enlargement in a spiral direction and terminates against the outer face of the head D. The groove B<sup>6</sup> serves to prevent leakage of the lubricant by way of the head D and the inner end of the box C.

When the device is in use and the box C rotates around the spindle in the direction of the arrow a', then the oil passes from the chamber F into the forward end of the spiral groove B<sup>4</sup> to be then wiped back by the action of the box C along said groove, and during this operation the lubricant is carried from the groove around the spindle B by the action of the box C to thoroughly and evenly lubricate the spindle. The surplus lubricant is carried by the box C into the top groove B<sup>5</sup>, from which the lubricant flows back into the oil-chamber F to be reused, as above described. Thus by the arrangement set forth a free circulation of the oil is established—that is, the oil passes from the chamber through the groove B<sup>4</sup> to the spindle, the surplus oil returning to the chamber F for reuse.

The grooves B<sup>4</sup> B<sup>5</sup> have their rear edges rounded off, as plainly indicated in Fig. 3, to prevent dirt and other impurities from collecting in the grooves and at the same time allow the oil on the spindle to freely flow back into the groove B<sup>5</sup> when the vehicle is at a standstill. The threaded end B<sup>3</sup> is a fraction lower than the enlargement B' when the vehicle is on a level, and consequently all the oil on the spindle and in the grooves will gravitate to the oil-chamber F when the vehicle is at a standstill; but as soon as the vehicle is put in motion the revolution of the

box will agitate the oil and cause it to enter the feed-groove B<sup>4</sup>.

It is understood that the groove B<sup>4</sup> is wound spirally from the chamber F in the direction in which the box C is running to cause the box to wipe the oil into the groove, as above explained. Thus for the right-hand end of the axle the groove B<sup>4</sup> runs in an opposite direction to that of the left-hand end of the axle.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A vehicle-axle having a spindle formed with a return oil-groove extending partly longitudinally on the top from the inner end toward the outer end, the outer portion of the groove curving downwardly and forwardly to the under side of the spindle, and a box for the spindle, having at its outer end an oil-chamber for containing the lubricant, the forward portion of said return-groove opening into the bottom of the said chamber, as set forth.

2. A vehicle-axle having a spindle formed with a spiral feed-groove extending rearwardly from the bottom of the spindle at the forward end to the top at the rear end, and a box for the spindle, having at its outer end an oil-chamber for containing the lubricant, the forward bottom portion of said feed-groove opening into said chamber, as set forth.

3. A vehicle-axle having a spindle formed with a return-groove extending partly on the

top from the inner end of the spindle toward the outer end, the outer portion of the groove curving downwardly and forwardly to the under side of the spindle, the latter being also formed with a spiral feed-groove leading rearwardly from the bottom of the spindle at the outer end thereof and thence extending in a forward direction to the top of the spindle at the inner end of the same, and a box for the spindle, having at the outer end an oil-chamber for containing the lubricant, the forward portions of said grooves opening into said chamber, as set forth.

4. A vehicle-spindle having an enlarged inner end and a reduced outer end and provided with a return-groove extending for the greater portion of its length longitudinal of the spindle and having its outer end curved downwardly and forwardly to the under side of the spindle, a spiral feed-groove leading rearwardly from the under side at the outer end and thence extending forwardly to the top of the spindle at the inner end, and a groove in the enlargement of the spindle, said groove extending from the inner end of the feed-groove to the head of the spindle, substantially as herein shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN GARY ANDERSON.

Witnesses:

J. B. CREIGHTON,  
WADE B. RODDEY.