No. 667,778. Patented Feb. 12, 1901.

E. D. IVES.

VEHICLE AXLE.

(Application filed June 15, 1900.)

(No Model.)

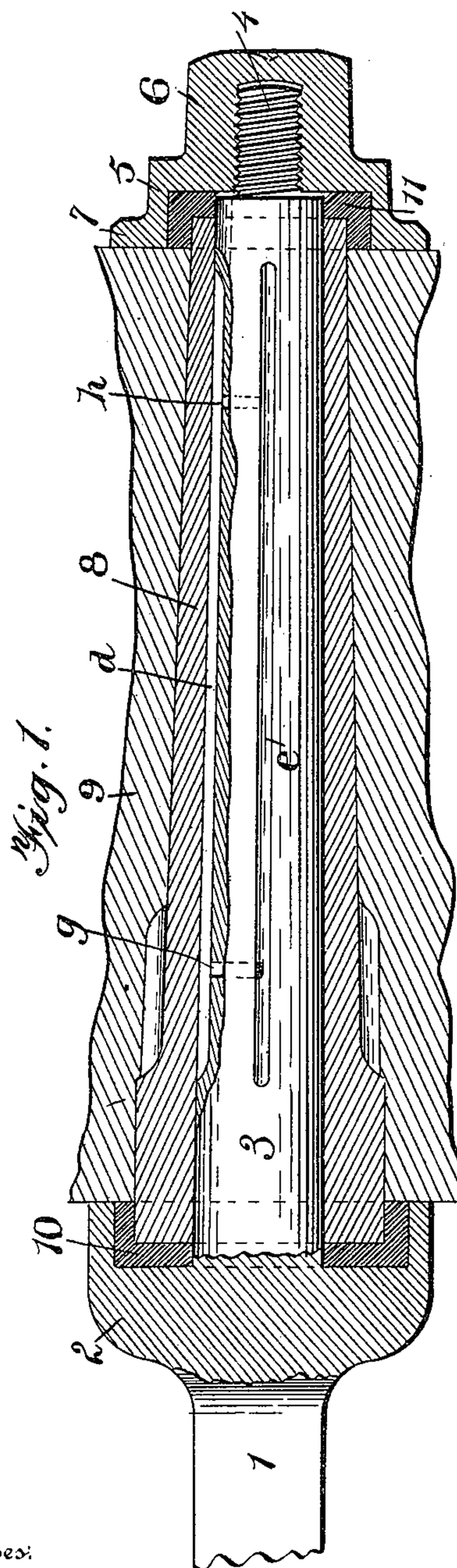

Fig. 1.

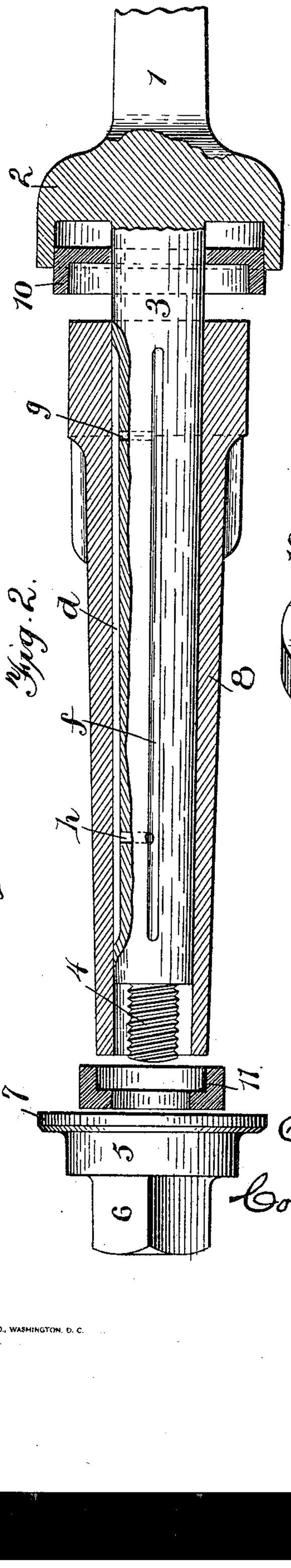

Fig. 2.

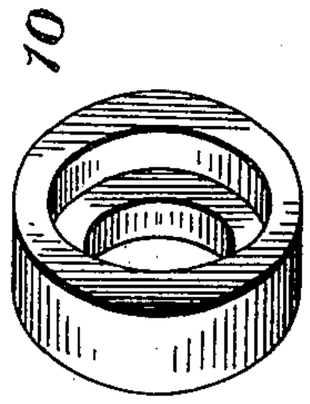

Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

ELLSWORTH D. IVES, OF NORFOLK, CONNECTICUT, ASSIGNOR OF ONE-HALF TO MERIT N. WOODRUFF, OF SOUTHINGTON, CONNECTICUT.

VEHICLE-AXLE.

SPECIFICATION forming part of Letters Patent No. 667,778, dated February 12, 1901.

Application filed June 15, 1900. Serial No. 20,481. (No model.)

To all whom it may concern:

Be it known that I, ELLSWORTH D. IVES, a citizen of the United States, and a resident of Norfolk, Litchfield county, State of Connecticut, have invented certain new and useful Improvements in Vehicle-Axles, (Case B;) and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to vehicles, and more especially to the axles thereof; and the object of the same is to produce a lubricating axle-arm having means for retaining the oil, excluding dust and foreign matter, and preventing the rattling of parts.

To these ends the invention consists in an improvement upon my Patent No. 614,656, issued November 22, 1898, as well as an improvement upon the patent to Lewis Burg, No. 549,103, issued November 5, 1895.

Specifically, the improvement consists in combining with the grooves or oil-receptacles as shown in said patents, or with any other oil-receptacle adapted for use in this location, a pair of washers of L-shaped cross-section located at the extremities of the axle-arm and respectively within the axle-collar and the nut, all as hereinafter more fully described and claimed and as illustrated in the accompanying drawings, wherein—

Figure 1 is a central longitudinal section of this device complete and with its parts assembled. Fig. 2 is a similar section with the parts slightly removed from their relative positions looking toward the other side of the axle-arm. Fig. 3 is a perspective detail of the washer.

Referring to the drawings, 1 designates the axle-bed; 2, the axle-collar formed thereon and usually integral therewith, with its cup-shaped face projecting toward the extremity of the axle; 3, the axle-arm, here shown as provided with the same longitudinal grooves *d e f* and transverse ducts *g h* as illustrated in my former patent above mentioned; 4, the reduced and threaded outer extremity of the axle-arm; 5, the nut, made angular, as at 6, for the reception of a wrench and having at its inner end a flange 7, with a cup-shaped recess facing inwardly; 8, the axle-box surrounding the axle-arm and extending at its extremities into the recesses of the collar and nut, and 9 the hub, which is secured upon and around the axle-box by ears, as usual, or in any suitable manner.

Coming now more particularly to the present invention, 10 designates a washer, of L-shaped cross-section, which is seated within the recess in the collar 2, so that the inner extremity of the box 8 rests against the vertical portion of this washer, while its horizontal portion projects outwardly for about a quarter of an inch over and around the exterior of the inner end of said box, with its edge lying preferably close to or in actual contact with the inner end of the hub 9. In similar manner 11 designates a washer, of L-shaped cross-section, seated within the recess in the nut, with its vertical portion lying against the base of said recess and having an opening of sufficient size to pass not only over the threaded portion 4, but also over the outer end of the axle-arm 3 when the nut is screwed in place. The horizontal portion of this washer passes inward for about a quarter of an inch over and around the outer end of the axle-box 8, with its edge preferably standing flush with the inner face of the flange 7 of the nut and also preferably resting close against or in proximity to the outer end of the hub. Both said washers are made removable, so that they can be replaced when damaged or worn, and they are of any suitable material, while their size and the proportion of their parts depend upon the construction of the members of the bearing with which they are employed. Especial merit is claimed for the use of these washers in connection with an axle-arm having grooves or other means for receiving, containing, and distributing a lubricant. The reason is because I have found by experience that axle-arms so provided with lubricant-receptacles are liable to leak at both ends of the hub and are also likely to admit dirt and other foreign matter, as well as to rattle.

By using the washers above described I not only prevent leakage and rattling and avoid the entrance of foreign matter, but I also give the axle-box its greatest possible length or bearing upon the axle-arm.

I find that it is no detriment to have the hub a trifle shorter than the box. In fact, the horizontal portions or flanges of the washers which overlap and surround the ends of the box provide additional means for preventing egress of oil and ingress of dirt if they rest at their edges against the ends of the hub. It will be clear that with this construction there is no necessity for the employment of the dust-cap or double nut so commonly used to close the outer end of the bearing.

What is claimed as new is—

1. The combination with an axle whose arm is reduced and threaded at its outer end, an axle-box journaled on said arm, and a washer at the inner end of the box; of a nut screwed on the outer end of the arm and having a recess in its inner face, and a washer of L-shaped cross-section seated within said recess with its vertical portion fitting around the outer end of the arm and its horizontal portion fitting around the outer end of the box, substantially as described.

2. The combination with an axle whose arm is threaded at its outer end, an axle-box journaled on said arm, a hub on the box, and a washer at the inner end of the box; of a nut screwed on the outer end of the arm and having a flange at its inner end resting normally against the outer end of the hub, said nut having a recess within the flange, and a washer of L-shaped cross-section located within the recess with its vertical portion fitting around the axle-arm and its horizontal portion fitting around the outer end of the box and resting at its edge normally against the outer end of the hub, substantially as described.

3. The combination with an axle having between its bed and arm a collar provided with a recess facing longitudinally outward, a nut on the outer end of the arm, and a washer at the inner side of this nut; of the axle-box surrounding the arm and resting at its outer end against the washer adjacent said nut, a washer of L-shaped cross-section seated within the recess in the collar with its vertical portion standing against the extremity of the box and its horizontal portion fitting around the inner end thereof, and a hub on the box whose extremity rests normally against the washer adjacent the nut and against the inner edge of the horizontal portion of the other washer, substantially as described.

4. The combination with an axle having between its bed and arm a collar provided with a recess facing outwardly, a nut on the outer end of the arm having in its inner face a recess facing inwardly, and washers located within said recesses with their vertical portions against the bottoms thereof and their horizontal portions projecting toward each other; of an axle-box surrounding the arm with its extremities in contact with the vertical portions of the washers and the horizontal portions thereof surrounding its ends, and a hub on the box whose extremities are normally in contact with the inner edges of the horizontal portions of said washers, substantially as described.

5. The combination with an axle having a collar between its bed and arm provided with a recess facing longitudinally outward, said arm having grooves and ducts for the reception of the lubricant, and a nut at the outer end of the arm having a recess facing longitudinally inward; of an axle-box surrounding the arm and carrying the hub, and washers of L-shaped cross-section located within said recesses with their vertical portions in contact with the extremities of the box and their horizontal portions surrounding its ends, substantially as described.

6. The combination with an axle having between its bed and arm a collar provided with a recess facing outwardly; a nut on the outer end of the arm having in its inner face a recess facing inwardly, and washers of L-shaped cross-section located within said recesses with their horizontal portions projecting toward each other; of an axle-box surrounding the arm with its extremities in contact with the vertical portions of the washers and the horizontal portions thereof surrounding its ends, and a hub on the box, substantially as described.

In testimony whereof I have hereunto subscribed my signature this the 14th day of June, A. D. 1900.

ELLSWORTH D. IVES.

Witnesses:

N. L. COLLAMER,

F. R. FITTON.