(No Model.)

J. R. COLE.

VEHICLE AXLE.

No. 414,021 Patented Oct. 29, 1889.

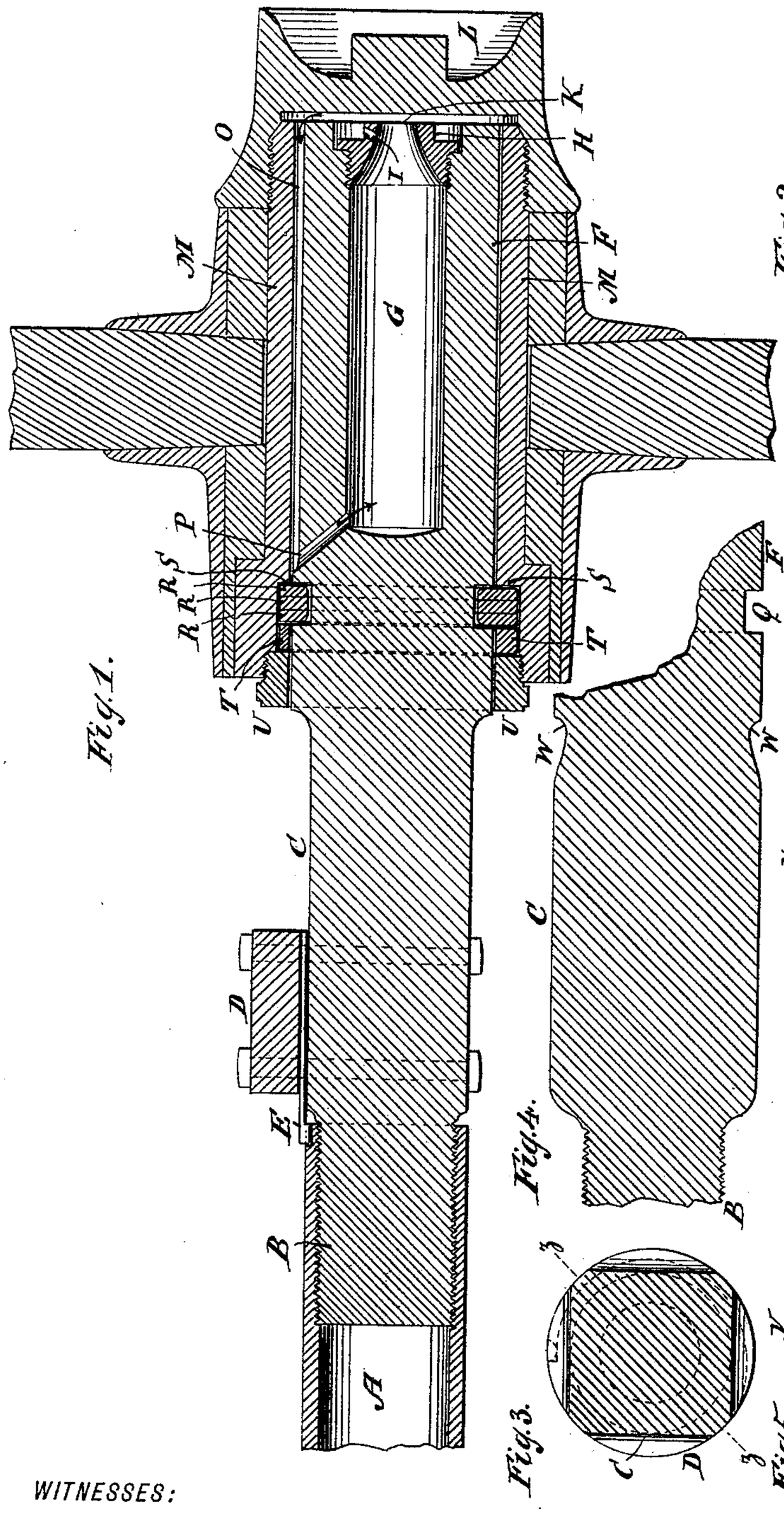

Fig. 1.

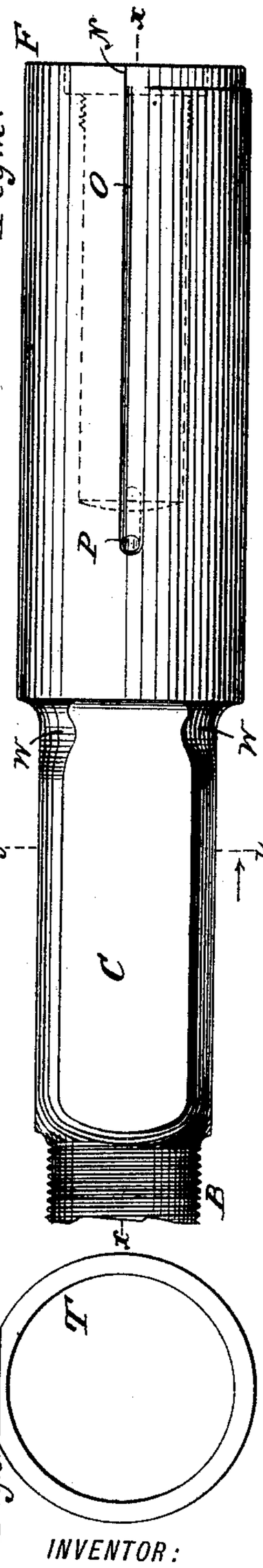

Fig. 2.

Fig. 4.

Fig. 3.

Fig. 5.

WITNESSES:

Edward Wolff.
William Miller

INVENTOR:

Jonah R. Cole.

BY Van Santvoord & Hauff

ATTORNEYS

UNITED STATES PATENT OFFICE.

JONAH R. COLE, OF NEW YORK, N. Y., ASSIGNOR TO LEFFERT LEFFERTS AND FANNIE T. COLE, BOTH OF SAME PLACE.

VEHICLE-AXLE.

SPECIFICATION forming part of Letters Patent No. 414,021, dated October 29, 1889.

Application filed April 19, 1889. Serial No. 307,651. (No model.)

To all whom it may concern:

Be it known that I, JONAH R. COLE, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Axles, of which the following is a specification.

This invention relates to an improvement in axles; and the object of the invention is to secure a strong axle which can be readily adapted to wagon-bodies of various sizes, as set forth in the following specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of an axle along line *x x*, Fig. 2. Fig. 2 is a plan view of an axle. Fig. 3 is a section along *y y*, Fig. 2. Fig. 4 is a section along *z z*, Fig. 3. Fig. 5 shows a detail view of an anti-friction ring. Similar letters indicate corresponding parts.

In the drawings, the letter A indicates an axle-bed, to which is secured the screw-threaded bed portion B, of uniform diameter. The bed A and bed portion B are made lengthwise adjustable with relation to one another, either by making the bed A hollow and screwing the bed portion B into the bed A, or by reversing the arrangement and screwing the bed A into the bed portion B. The neck C carries the spring D, and when the bed A and bed portion B are in proper position a key E, of flexible metal or other suitable material, is forced into position to lock the bed A and bed portion B. The neck C has a cylindrical arm F of uniform diameter. As seen in Figs. 3 and 4, the diameter of the cylindrical arm F is equal to the cornerwise thickness of the neck, and by making the neck of such thickness a stronger structure is obtained than would be the case if the cornerwise thickness of the neck were less than the diameter of the arm. The arm F has an oil-chamber G, having a cap H, provided with a filling-opening I and a discharge-opening K. The oil passing out of opening K enters the cap L, secured to the hub M. Said cap L rotates with the hub, and in its rotation carries the oil about, so as to distribute the same and lubricate the hub. The surplus oil is scraped off by a shoulder N, Fig. 2, on the arm, and, entering the channel O, passes through opening P back into chamber G. The arm F has a groove Q, Fig. 4, in which sit the washer-sections R R R, projecting somewhat beyond the arm F. The hub M has a shoulder S, and the ring T is forced by the nut U against washer R R R, so as to lock the washer between the ring T and shoulder S, so that the washer turns with the hub. To insure the ring T and washer turning with the hub, the ring and washer have each a flat face, such as the face V of the ring T, Fig. 5, and said face engaging a corresponding flat portion of the hub compels the ring T and washer to turn with the hub. The ring T prevents the nut U chafing against the washer. By making the washer of various sections R R R one section can be removed when worn, while the others can still be retained for use, and the various washer-sections can be made of different material, as may be considered suitable.

To prevent dirt which may lodge on the neck C from passing to the arm F, a depression or groove W is formed on the neck at its juncture with the arm, so that any dirt working along the neck C enters the groove W, whence it will fall off rather than crawl along to the arm F.

The cap H has its inner face inclined toward the discharge-opening K, so that the oil from chamber G can be easily jogged or dashed toward and out of the opening K by the movements of the vehicle.

What I claim as new, and desire to secure by Letters Patent, is—

1. A vehicle-axle consisting of a bed portion, a neck, and a cylindrical arm of a diameter equal to the cornerwise thickness of the neck, said neck having a groove or depression at its juncture with the arm, substantially as described.

2. A vehicle-axle consisting of an arm F, a neck C, a bed portion B, and a bed A, adjustable along the bed portion, in combination with the spring D and the key E, extending along the axle-neck beneath the spring and engaging the axle-bed, substantially as described.

3. The axle having a cylindrical arm F, provided with the annular groove Q, and the washer R, located in said groove and held by

the opposite side walls of the groove, in combination with the hub M, having the shoulder S and extending inward over the washer, and the nut U, located directly upon the inner end of the cylnidrical axle-arm and engaging the hub, substantially as described.

4. The combination, with an axle-arm having a groove Q and a washer seated in said groove and made to project beyond the arm, of a hub seated on the arm and having a shoulder S, made to engage the washer, a nut U, for locking the hub and washer together, and an anti-friction ring T, interposed between the washer and nut, substantially as described.

5. The combination, with an axle-arm having a groove Q and a washer seated in said groove and made to project beyond the arm, of a hub seated on the arm and having a shoulder S, made to engage the washer, and a nut U, for locking the hub and washer together, said washer and hub having flat faces or portions for preventing the hub turning independently of the washer, substantially as described.

6. A vehicle-axle having its arm provided with an oil-chamber having a cap provided with a filling-opening I and discharge-opening K, said arm having a channel O and return-opening P, for leading the surplus oil to the chamber, substantially as described.

7. A vehicle-axle having its arm provided with an oil-chamber having a cap provided with a filling-opening I and discharge-opening K, said arm having a channel O, a return-opening P, and a shoulder N, for removing surplus oil from the hub, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

JONAH R. COLE. [L. S.]

Witnesses:
WILLIAM C. HAUFF,
ERNST F. KASTENHUBER.