

J. A. MACKINNON.
Vehicle-Axle Box.

No. 214,435.

Patented April 15, 1879.

Fig. 1.

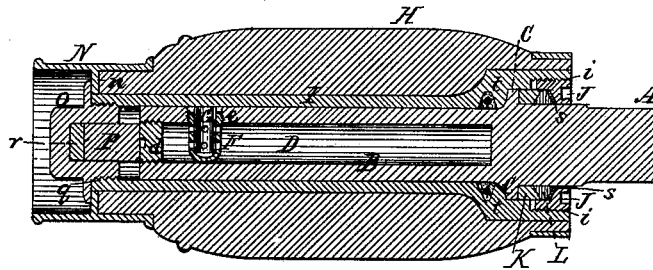


Fig. 2.

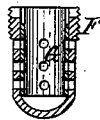


Fig. 3.

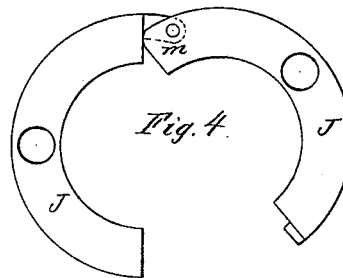
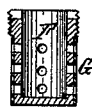
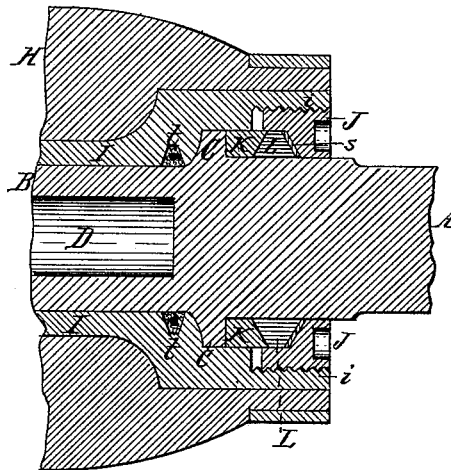


Fig. 5.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN VEHICLE AXLE-BOXES.

Specification forming part of Letters Patent No. **214,435**, dated April 15, 1879; application filed September 6, 1878.

To all whom it may concern:

Be it known that I, JOHN A. MACKINNON, of Caledonia, in the county of Livingston and State of New York, have invented new and useful Improvements in Vehicle Axle-Boxes, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates more especially to that class of vehicle axle-boxes in which the spindle upon which the box turns is made hollow, so as to form a reservoir for the lubricating material, thereby rendering the axle-box self-oiling.

My invention consists of the peculiar construction of the device for feeding the lubricant from the reservoir to the bearing-surfaces, and also of the peculiar construction of the parts by which the box is held on the spindle, and the escape of the lubricant from the box and the ingress of dirt to the same are prevented, as will be hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a longitudinal section of an axle-box and spindle provided with my improvements. Fig. 2 is a detached view, on an enlarged scale, of the device for feeding the lubricant to the bearing-surfaces. Fig. 3 is a view of the same device in a modified form. Fig. 4 is a detached view of the hinged annular screw sleeve or nut opened. Fig. 5 is a fragmentary sectional view, on an enlarged scale, of the rear end of the axle-box.

Like letters of reference designate like parts in each of the figures.

A represents the axle, B the spindle, and C the collar arranged between the axle and the spindle. D is the axial cavity, formed in the spindle by boring into the same from the end thereof to such a distance as to form an oil-reservoir of the required capacity. The front end of the cavity D is closed hermetically by a plug, *d*, or any other suitable means.

e is an opening or passage formed near the front end of the spindle, on its upper side, so as to communicate with the reservoir D. The opening *e* is provided with an internal screw-thread for the reception of a threaded sleeve, F, which is firmly secured therein. The lower end of the sleeve F is closed, and its sides are

perforated, so that the oil can pass from the reservoir D into the sleeve.

G is a regulating-sleeve, arranged within the sleeve F so as to fit snugly against the inner side thereof, and provided with perforations corresponding in arrangement and size with those of the sleeve F. By placing the sleeve G so that its perforations coincide with those of the sleeve F, the perforations of the latter are entirely uncovered, while by turning the sleeve G the perforations of the sleeve F can be partially or entirely closed, as may be required. In this manner the passage of the oil from the cavity D to the interior of the sleeve F can be regulated or entirely prevented, as the condition of the bearing-surfaces may require.

The sleeve F is filled with a sponge or other capillary body, whereby the oil is fed to the surfaces of the spindle and box.

The upper edges of the sleeves F and G are notched, so that they can be readily turned by means of a suitable screw-driver.

If preferred, the collar or sleeve G may be arranged upon the outer side of the sleeve F, as shown in Fig. 3, instead of on the inner side thereof, as shown in Figs. 1 and 2.

For supplying the oil to the cavity D, the sleeve F is preferably removed from the opening *e*.

H represents the hub, and I the axle-box secured therein. *i* is an internal screw-thread formed in the inner end of the axle-box I, on the inner side of the collar C; and J is a screw-collar or annular nut surrounding the axle, and engaging in the thread *i*. K is a wooden ring or washer arranged on the inner side of the collar C.

The adjacent sides of the annular nut J and washer K are made concave for the reception of a packing-ring, L, which is clamped between them. In this manner a stuffing-box is formed on the inner side of the axle-box which effectually excludes the dust from the bearing-surfaces, and also prevents the escape of the oil from the box, and which is easily tightened by means of a suitable wrench.

The annular nut J is formed in two parts, hinged together at *m*, so that it can be applied and removed after the axle is welded.

N is a metallic band or ferrule applied to the outer end of the hub H, and provided with an annular partition, *n*, bearing against the outer face of the hub, and held in place by a hollow screw, O, which engages in a thread, *q*, cut into the outer end of the axle-box. P is a wooden follower, arranged in the cavity of the screw O so as to bear against the end of the spindle. *r* is an elastic washer, of rubber or similar material, placed between the follower P and the bottom of the cavity of the screw O; and *s* is an elastic ring, arranged between the annular nut J and packing-ring L.

By tightening the nuts J and O the washers *r* and *s* are compressed, and by their resistance prevent any motion of the hub in the direction of the axle when the wheel is running.

t is an annular groove formed in the axle-box I, near its inner end, and in front of the collar C, for the reception of a sponge or other porous material, which absorbs the superfluous oil and assists in preventing the escape of the oil at the inner end of the axle-box.

In my improved axle-box the supply of oil to the bearing-surfaces can be nicely regulated, and the waste of oil by leakage or ingress of dust is entirely prevented.

I claim as my invention—

1. The spindle B, constructed with a cavity, D, forming an oil-reservoir, and having an opening, *e*, in its upper side, provided with a perforated sleeve, F, adapted to receive a sponge or other capillary body, substantially as and for the purpose set forth.

2. The combination, with the spindle B, provided with cavity D and opening *e*, of the fixed perforated sleeve F and adjustable perforated sleeve G, substantially as and for the purpose set forth.

3. The combination, with the spindle B, provided with collar C, and axle-box I, having an internal screw-thread, *i*, of the annular nut J and washer K, made concave on their adjacent sides, and interposed packing-ring L, substantially as and for the purpose set forth.

4. The combination, with the spindle B, having a collar, C, and the axle-box I, provided with screw-threads *i* and *q*, of the annular nut J, washer K, elastic ring *s*, hollow screw O, follower P, and elastic washer *r*, substantially as and for the purpose set forth.

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Witnesses:

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