W. G. BEATTIE.

AXLE-BOX.

No. 192,857. Patented July 10, 1877.

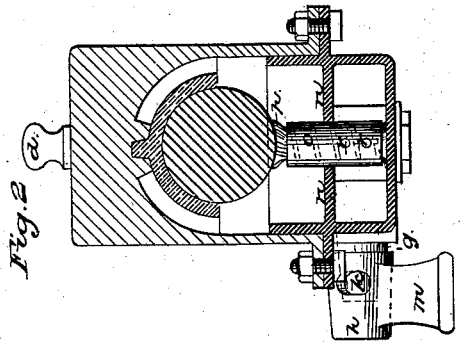

Fig. 2.

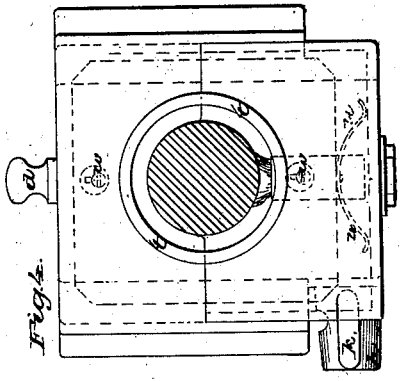

Fig. 4.

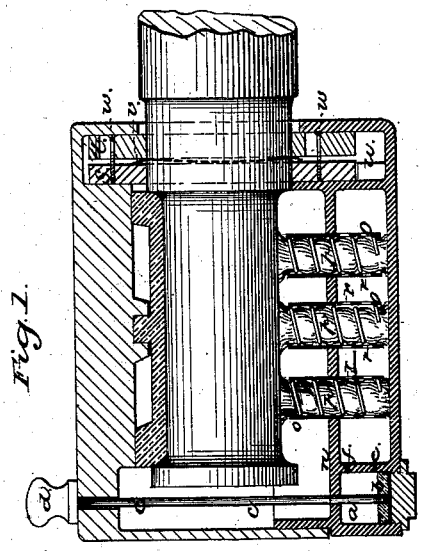

Fig. 1.

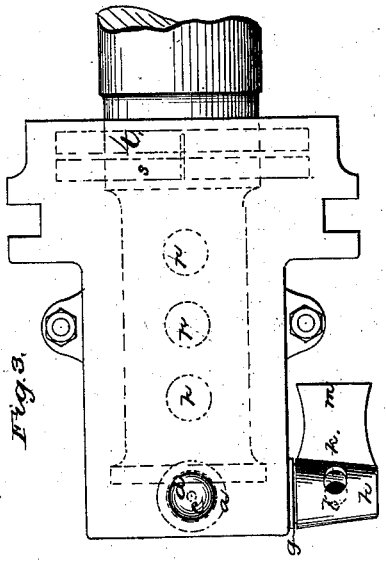

Fig. 3.

Attest:

Chas. H. Smith
Harold Serrell

Inventor:

William G. Beattie
per Lemuel W. Serrell
attys.

UNITED STATES PATENT OFFICE.

WILLIAM G. BEATTIE, OF NINE ELMS, LONDON, ENGLAND.

IMPROVEMENT IN AXLE-BOXES.

Specification forming part of Letters Patent No. **192,857**, dated July 10, 1877; application filed May 11, 1876; patented in England, August 7, 1875, for fourteen years.

To all whom it may concern:

Be it known that I, WILLIAM GEORGE BEATTIE, of Nine Elms, London, England, Engineer, have invented new and useful Improvements in Axle-Boxes, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

My invention consists, as hereinafter described, of apparatus for regulating the supply of oil in the axle-box, and for this purpose I fix either internally or externally to the axle-box, and vertically to it, a rod passing down to a hollow cylinder formed in or attached to the lower part of the axle-box. At the upper end the rod has a knob, and at the lower end it has a piston attached to it, and fitting the cylinder. The lower end of the cylinder is level with the bottom of the axle-box, and the inside of upper end through which the rod passes is at the proper level of the oil in the box. The rod is of such length that the piston rests on the lower end of the cylinder. In the side of the cylinder one or more apertures communicating with the interior of the axle-box are formed just above the piston when it is resting on the bottom of the cylinder, and also one or more apertures of small size at the upper end of the cylinder.

The accompanying drawings illustrate the manner in which I carry my invention into effect.

Figure 1 is a longitudinal section, Fig. 2 is a transverse section, Fig. 3 is a plan, and Fig. 4 is an end elevation, of an axle-box constructed according to my invention, and the contrivance for ascertaining whether or not the axle-box be supplied with oil is shown at Fig. 1.

a is the cylinder being formed in the lower part of the axle-box, and *b* the piston being fitted to it, and attached to the rod *c* passing to the upper part of the axle-box, and ending in the knob *d*. *e* are one or more holes made at the lower part of the cylinder, and *f* are one or more holes at the upper part of the cylinder.

When it is desired to ascertain if there be oil in the axle-box, the knob end *d* of the piston-rod *c* is to be raised, and if there be oil in the box it will have passed into the cylinder through the lower apertures *e*, and will be forced out through the upper apertures *f* by the raising of the piston *b*, and the apertures being small the resistance of the oil passing out will be felt, but if there is little or no oil in the box there will be no resistance felt. By this operation the temperature also of the axle-box will be indicated by handling the knob *d*.

If the supply of oil in the axle-box be found to be deficient, more oil can be poured into the box through a cock or valve fixed at the lower part of the axle-box at the proper level of the oil. I fix the plug to the cock to the axle-box, and I make the seating of the cock movable on the plug, which has a passage through it leading into the axle-box. I also prefer to place in the passage through the plug a spiral spring, and attach the external casing to it so that it (the external casing) is kept pressed onto the plug. An aperture is formed in the seating or casing to correspond to the passage in the plug, and the seating has, on one side, a handle, the weight of which tends to or causes the cock to shut itself, if it be accidently left open.

The construction of the valve for supplying the axle-box with oil is shown at Figs. 2, 3, and 4. *g* is the plug attached to the axle-box, and formed with a passage through it, as shown in dotted lines at Fig. 2. *h* is the casing attached to the plug, either by riveting or by a spring, and has a passage, *k*, formed through it to correspond to the entrance to the passage through the plug at *l*. *m* is the handle on the casing *h*, the weight of which tends to keep the valve closed.

I place in the lower part of the axle-box, just above the proper level of the oil, a diaphragm, which may be of thin sheet-iron, or be formed solid with the box, and I make through the diaphragm one or more apertures, preferably circular, through which I pass the carriers for the lubricating-wicks. The carriers are hollow, and are formed of tin or thin metal, and pass through the apertures in the diaphragm-plate, which they fit nearly to the bottom of the box, and are attached to the diaphragm, and extending up through it nearly to the under side of the journal. Inside the carriers I place the lubricating-wicks, which I

make of a mixture of cotton-wick and worsted, the strands of cotton and worsted being placed together vertically and passed through a light spiral spring.

The wicks, which are cut of suitable length, are placed in the carriers, the lower ends resting on the bottom of the axle-box and the upper ends pressing lightly on the under side of the journal by the action of spiral springs. I make a few perforations through the carriers to allow the oil to feed the wicks.

The diaphragm through which the lubricating-wicks are placed is shown at Figs. 1 and 2. *n n* is the diaphragm, formed in the lower part of the axle-box and above the proper level of the oil, and *o o o* are the circular metal carriers for the lubricating-wicks, which are passed through passages formed in the diaphragm. *p p* are the wicks, pressed up against the under side of the axle journal by the action of the spiral springs, through which the wicks are passed. The carriers are perforated at *r r*, as shown.

To prevent the oil escaping from the box, or dust entering, I place round the collar of the journal nearest to the wheel a shield of wood or other suitable material, formed in two parts, one part resting on the upper side of the journal and the other part being carried by a spring resting on the under side of the recess in the axle-box in which the shield is contained, so that it is pressed up to the under side of the collar. The parts of the shield are pressed apart laterally by springs *v* introduced between them, and they are attached together for convenience of handling by two screws fixed in one part, and working in slots in the other part, so that the two parts may slide one past the other.

I divide the axle-box horizontally into two parts bolted together.

These shields to prevent the entry of dust or the escape of oil from the axle-box are shown in section at Fig. 1, and in dotted lines at Figs. 3 and 4. *s* and *t* are the two parts of which the shields are formed, the inner part being pressed up against the under side of the collar of the journal by the spring *u*, and the part *t* resting on the upper part of the collar of the journal. The two parts *s* and *t* are pressed apart by the springs at *v v*, Fig. 1, so as to fit the recess formed in the axle-box in which they are placed. The parts *s* and *t* are attached to each other by the screws *w w*, Figs. 1, 3, and 4, in the manner shown, so that they are free to move vertically for a suitable distance past each other.

I claim—

1. The construction and arrangement of apparatus for ascertaining whether the axle-box is or is not supplied with oil, consisting of cylinder *a*, piston *b*, rod *c* with knob *d*, and apertures *e e* and *f f*, all combined and operating substantially in manner shown and described.

2. The combination, in the car-axle box, of the supply-cock *h m*, wicks *p*, carriers *o*, diaphragm *n*, oil-cylinder *a*, piston *b*, and rod *c*, substantially as set forth.

3. The dust-shields *s* and *t* above and below the journal, respectively, and attached to each other by the screws *w*, in combination with the spring *u* acting on the shield *s*, and the springs *v* that press the shields apart and against the inner surfaces of their containing recesses, substantially as set forth.

WILLIAM GEORGE BEATTIE.

Witnesses:
WILMER M. HARRIS,
JOHN DEAN,
Both of No. 17 Gracechurch Street, London, E. C.