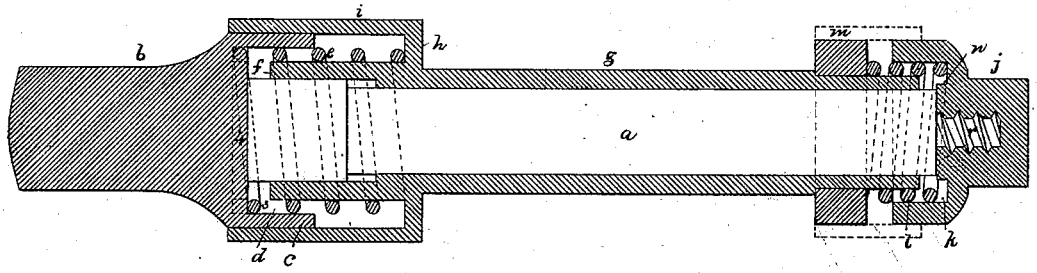
J. F. JOHNSON.

Carriage Axle Box.

No. 201,791. Patented March 26, 1878.



Witnesses.

E. C. Perkins.

W. J. Platt.

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UNITED STATES PATENT OFFICE.

JAMES F. JOHNSON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN CARRIAGE-AXLE BOXES.

Specification forming part of Letters Patent No. **201,791**, dated March 26, 1878; application filed September 1, 1877.

To all whom it may concern:

Be it known that I, JAMES F. JOHNSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Carriage-Axles, of which the following is a specification:

This invention relates to carriage-axles wherein the axle-box and hub are permitted to move a short distance longitudinally upon the axle, springs at each end of the axle-box controlling the extent of such lateral movement; and the present invention is an improvement on Letters Patent No. 175,999, heretofore granted to me. In that patent the springs surrounding the ends of box rested at their outer ends against the flanged end of the nut and the end of the collar on the axle.

With such an arrangement of the outer ends of the springs, to enable springs of the proper length to be employed, it was necessary to place the removable spring-holder and the shoulder both outside the box, so near the center of the length of the box that, when the box was driven into the hub, the holder and shoulder were made to occupy a position between the hub-bands and a line drawn centrally through the hub at right angles. The shoulder and holder so located strained the wood of the hub, and caused it to check or split between the bands and the spokes.

To obviate this, I have increased the diameter of the collar on the axle, and also the diameter of the nut, and have chambered them so as to receive the springs, thereby permitting the shoulder and holder on the outside of the box to be placed farther apart, and so as to fall in line with the hub-bands when the box is placed in the hub, the chambers receiving the outer ends of the springs, thereby enabling them to be made of the usual length.

The drawing represents in longitudinal section an axle and box made in accordance with this invention.

The bearing portion *a* of the axle may be of any usual construction, it projecting from an arm, *b*, provided with a collar, *c*, having a chamber, *d*, of greater diameter than the diameter of the coiled spring *e*, surrounding the inner end *f* of the box *g*. The inner end of the spring *e* rests against an annular shoulder, *h*, on the box, a hood, *i*, preferably projecting backward over the spring and chambered collar. The nut *j*, increased in diameter, is provided with a chamber, *k*, of a diameter greater than that of the coiled spring *l*, placed about the outer end of the box. One end of this spring *l* rests within the chambered nut, and the other against the spring-holder *m*, on the outside of the box.

If the diameter of the chamber in the nut was only of the diameter of the box, so that the inner end of the spring rested against the end of the box rather than against the holder *m*, then the chamber in the nut would have to be cut deep into the nut beyond the portion *n*, adapted to meet the extreme outer end of the bearing portion *a*, and the portion of the nut into which the screw *r* works would be too much weakened to hold the wheel safely on the axle.

In this axle as now improved by me, the seat 4 on the axle, against which the end 3 bears, is made back on the axle some distance beyond the end of the box, permitting the box to have a considerable movement before its ends come in line with the bearing for the end 3 of the spring.

The chamber *d*, to receive the spring, need not necessarily extend beyond the seat 4, but it may do so in order to form an annular interior support for the end 3 of the coiled spring. In such case the spring would be held in place, even if the whole of the cylindrical shell of the collar in front of the seat 4 toward the nut should be cut off.

The holder *m* may be provided with a band, (shown in dotted lines,) to cover the nut, and prevent the passage of oil from the box into the wood of the hub.

In practice it is contemplated that the spring *e* shall be of such strength that the end of the box will never strike the seat 4.

I claim—

1. The combination, with the axle, the box *g*, its shoulder *h*, and spring *e*, of a chambered collar, *c d*, to receive within it the end of the spring, and permit the movement of the end of the box within the spring, substantially as described.

2. The combination of the box, its shoulder, the spring *e* arranged to extend beyond

the end of the box, and the axle, and its collar chambered to receive the end of the spring projected beyond the box.

3. The combination, with the axle-arm, provided with a seat, 4, and a projecting portion to enter the cylindrical opening in the interior of the spring, of a spiral spring, arranged about the outside of the box, and extended beyond the end of the box, substantially as described.

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

JAMES F. JOHNSON.

Witnesses:
G. W. GREGORY,
W. J. PRATT.