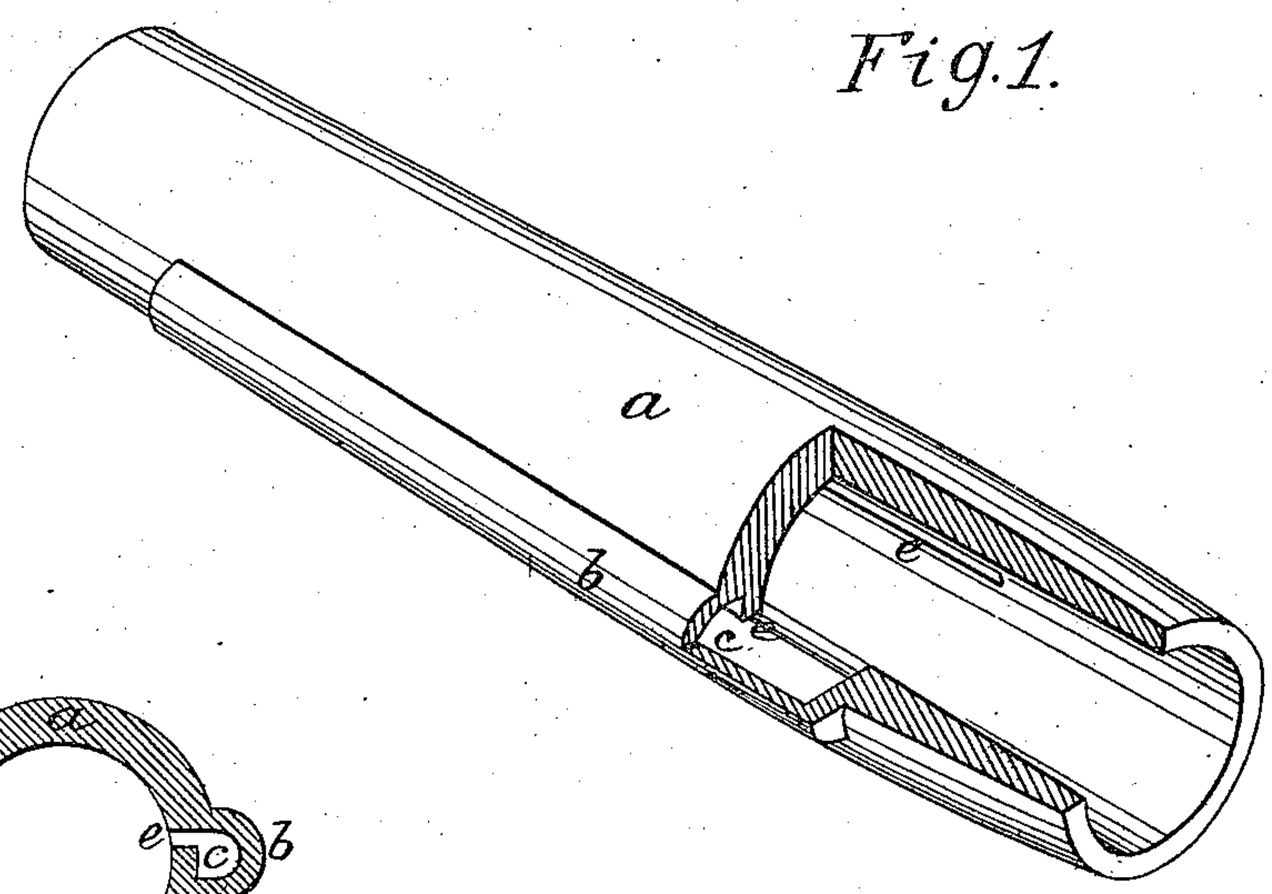
A. E. Smith,

Axle Box,

No. 14,415. Patented Mar. 11, 1856.

Fig. 1.



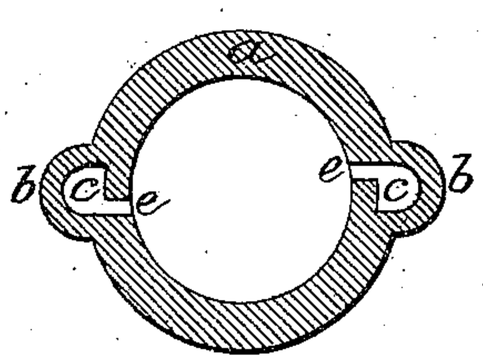


Fig. 2.

UNITED STATES PATENT OFFICE.

ALFRED E. SMITH, OF BRONXVILLE, NEW YORK.

BOX FOR AXLES.

Specification of Letters Patent No. 14,415, dated March 11, 1856.

To all whom it may concern:

Be it known that I, ALFRED E. SMITH, of Bronxville, county of Westchester, and State of New York, have invented certain new and useful Improvements in the Construction of Boxes for Axles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being made to the annexed drawings, making a part of this specification, in which—

Figure I is a perspective view of my box, a part being in section to show interior construction; Fig. II is a transverse section; and similar letters refer to similar parts throughout.

My invention consists in such improvements in the construction of the boxes for carriage wheel axles that the said axles may not only be kept more perfectly and constantly lubricated, but also that the oil employed for that purpose shall be preserved, particularly when the wheel is at rest. This has been to some extent, accomplished by enlarging the bore of the box at the central portion so that the bearings of the axles were only at the ends, and this enlarged part could be filled with oil, where however it was of no possible use except as a reservoir to supply the bearing ends, and through which it was constantly wasting or oozing out.

It is desirable that the bearings of fine axles should be throughout the entire length of the box. The oiling of these has been attended with considerable difficulty, since they are accurately ground and fitted together, in order that the bearing may be as perfect as possible. The conditions required are, that a thin film of sperm or other fine oil should be constantly brought into contact with the axle as the box revolves upon it, and also that any excess should be taken up by the same act, to avoid both waste and unsightly appearance. A special groove, cut either on the interior of the box, or on the surface of the arm of the axle, has been employed to effect the proper oiling, but these necessarily cause much waste, since they act as conveyers when the wheel is in motion, to pass the oil out at one end. Grooves have also been cut in a direction parallel with the axis of rotation, both within the box and upon the exterior of the axle; these are in no sense reservoirs for the oil except when on the upper side of the axle, and as that is stationary the oil cannot be fed out to lubricate the surfaces.

By my improvement in the construction of the box I am enabled to permit a close fitting of the axle throughout its entire length, and yet to have reservoirs of oil so situated within the box itself that the surfaces in contact shall be fully lubricated, and without waste, as will be evident from the following description.

I make the box of suitable metal, and of the usual tapering form generally, as shown at (*a*). Upon the outside of this, along the central portion, and extending nearly the whole length, are cast at equal distance apart, two semi-circular projections (*b*), much after the form and serving the purpose of the ordinary "flies." These flies are not however solid but have longitudinal cavities throughout their entire length, and of the sectional form shown at (*c*), Fig. II. Each of these cavities communicates with the interior of the box by a narrow slot extending throughout the length of the cavity, and shown at (E) in both the figures. This slot is placed at the upper part of one of the cavities, and at the lower part of that one opposite, as shown in Fig. II. Into a box thus constructed an axle is fitted accurately by grinding so as to have bearing throughout the entire length. When these are to be put together, a quantity of oil sufficient to fill one of the cavities (*c*), is poured in, and this suffices for a long time. When the wheel is in motion the oil is soon divided between the two cavities, since at alternate parts of the revolution one is acting as a distributer, and the other at the same moment as a gatherer. A perfect lubrication of the surfaces is thus insured, for the cavities themselves present a stratum of oil constantly against the axle for nearly the entire length of the arm, and from this part enough works out to supply the ends.

I am aware that the flies have been cast with grooves in them, and that one of these grooves has been made to connect by a tube along the outside of the box, with the face of the hub, so that oil might be thereby poured in so as to avoid the necessity of taking the wheel off. These grooves cannot be said to act as reservoirs strictly, and they also have taken away too much of the bearing surface so that the axle wears into the box along the sides of the groove.

I do not claim making slots in the box in

the line of the axle, or reservoirs communicating with the axle by holes or funnel shaped apertures; but

What I claim as my invention and desire to secure by Letters Patent is—

The combination of two or more longitudinal narrow slots cut in the direction parallel to the axis of the box, with enlarged longitudinal cavities substantially as described and for the purpose specified.

ALFRED E. SMITH.

Witnesses:

S. H. MAYNARD,

WM. E. WHITE.