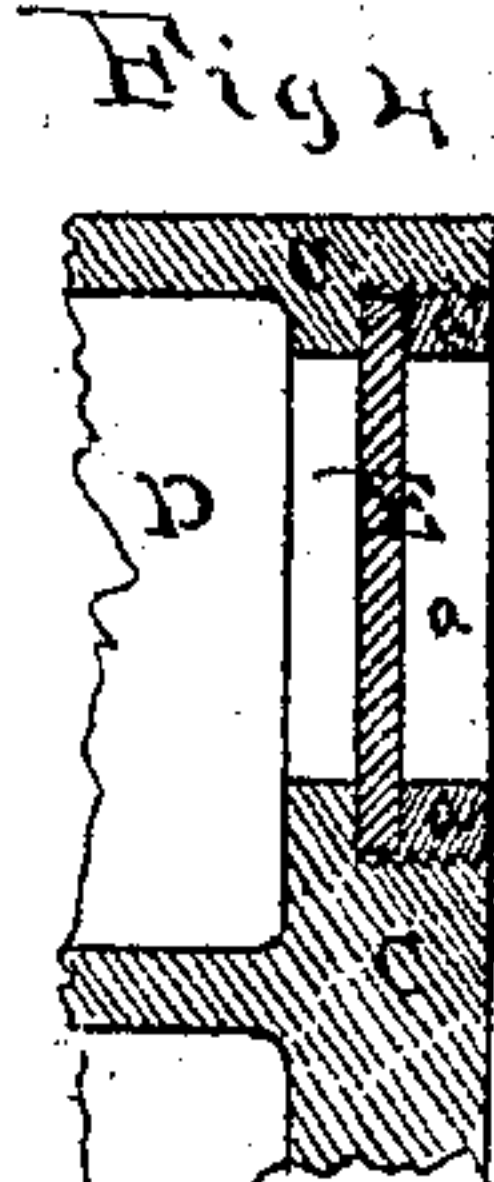
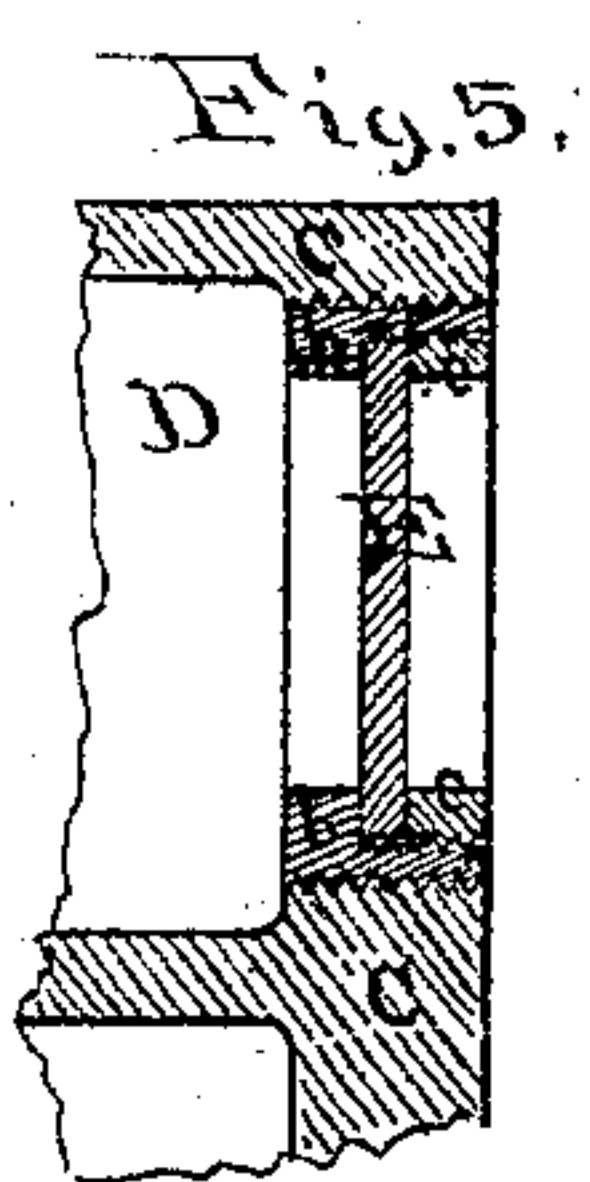
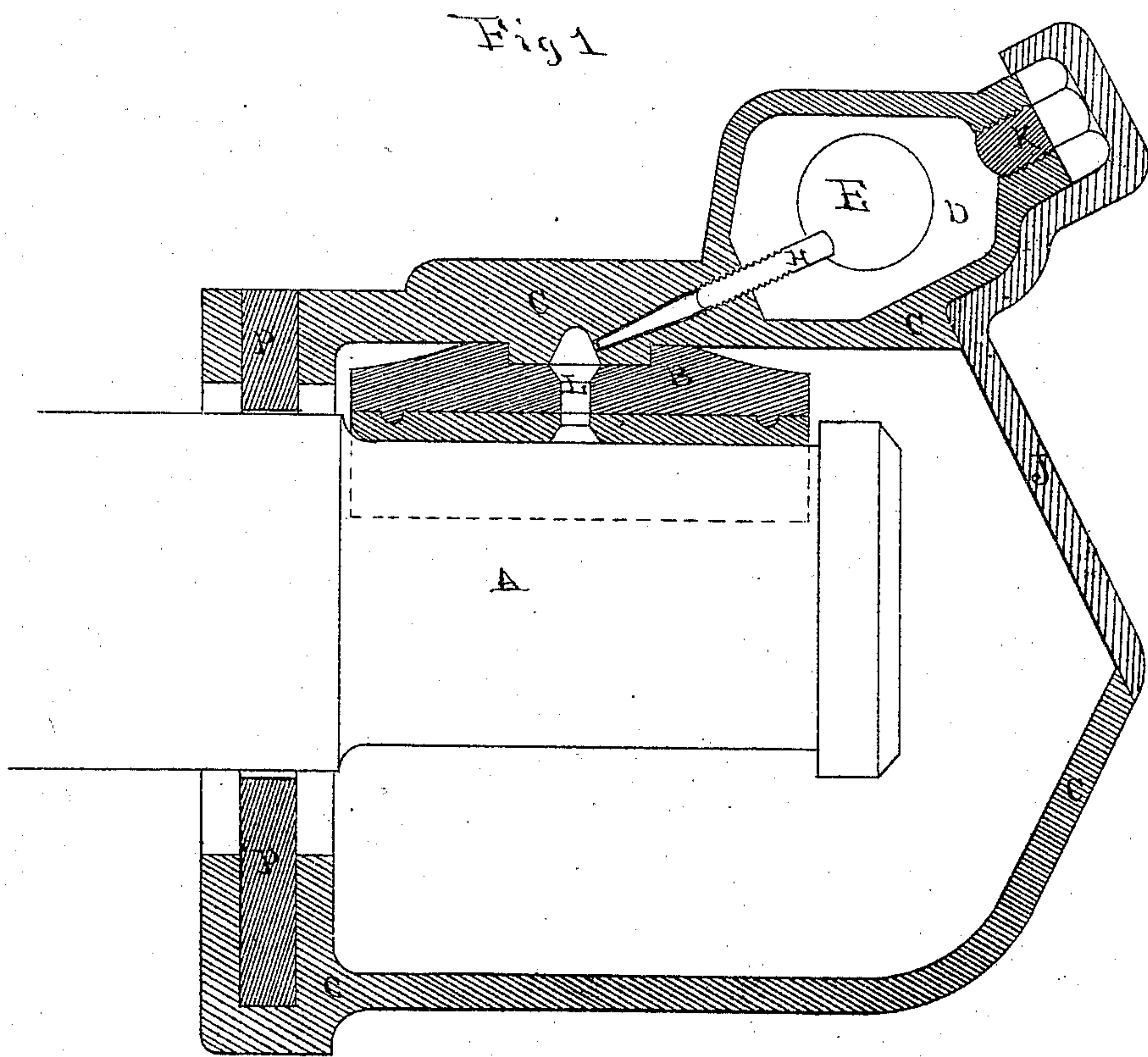


3 Sheets--Sheet 1.


S. F. GATES.
Car-Axle Boxes.

. No. 138,242.

Patented April 29, 1873.



Attest,
Wm. Field
Nathan Brown

 *Inventor;*
Stephen F. Gates

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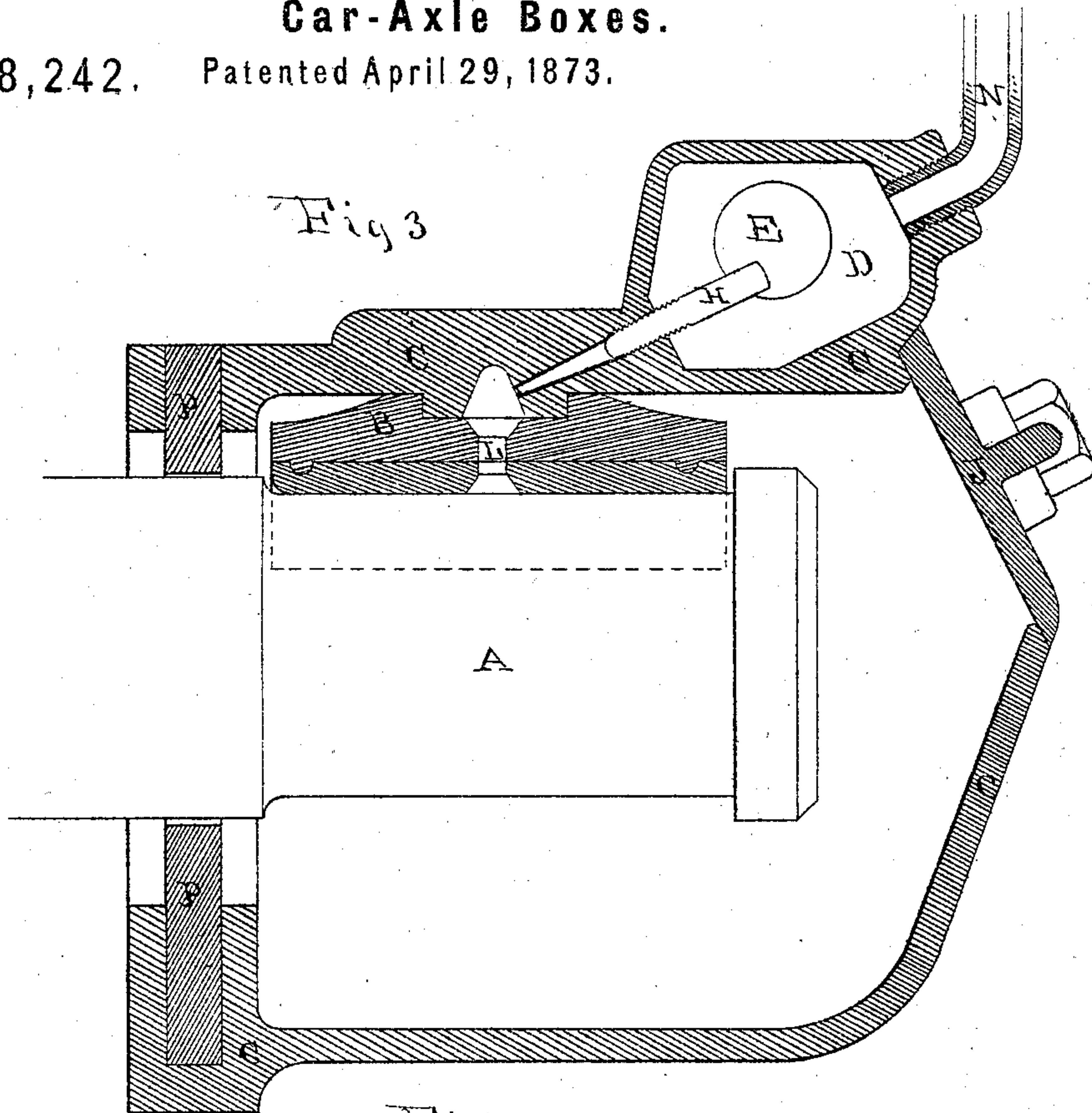
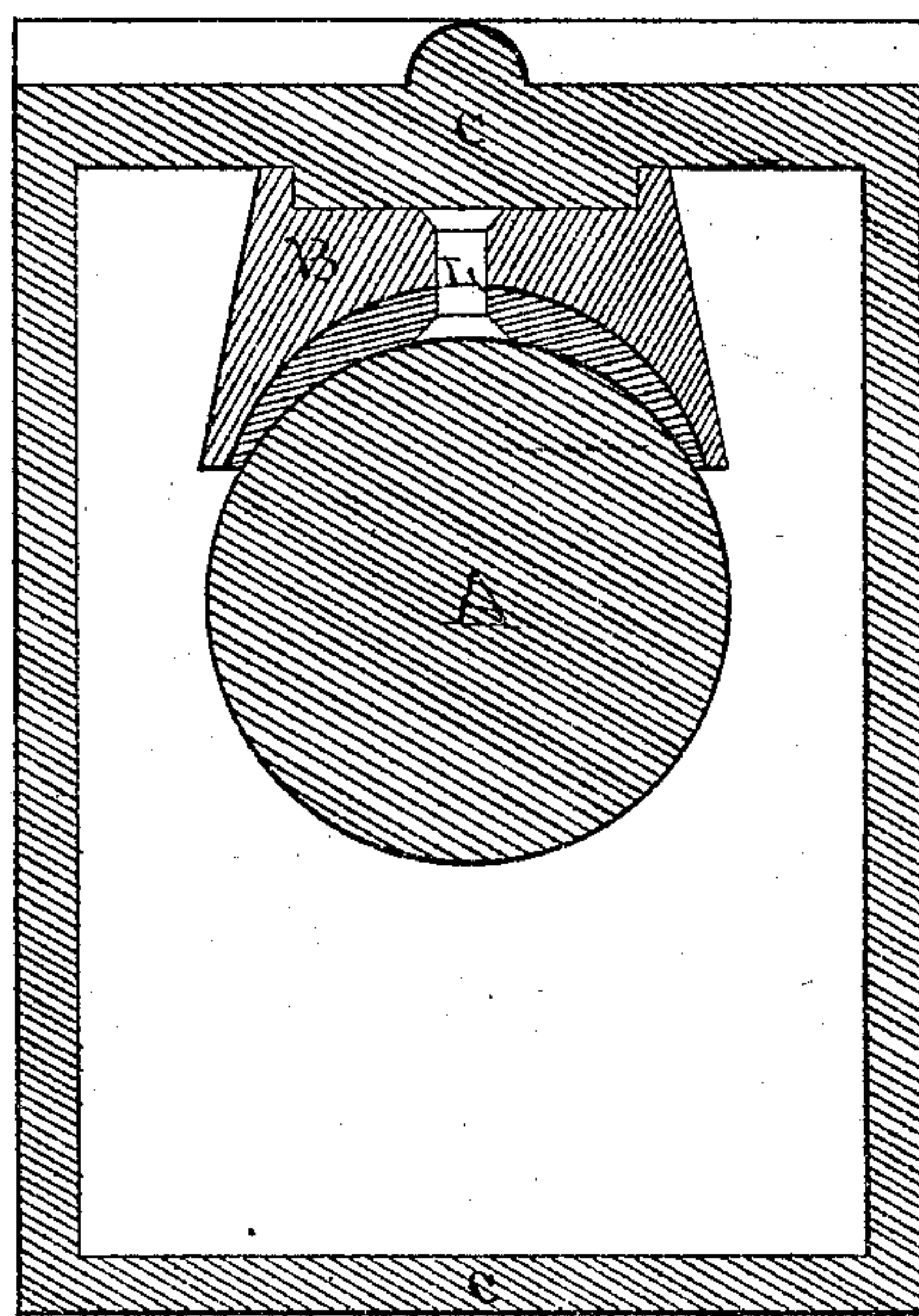


Fig. 2.



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M. M. Tidd
Nathan Brown

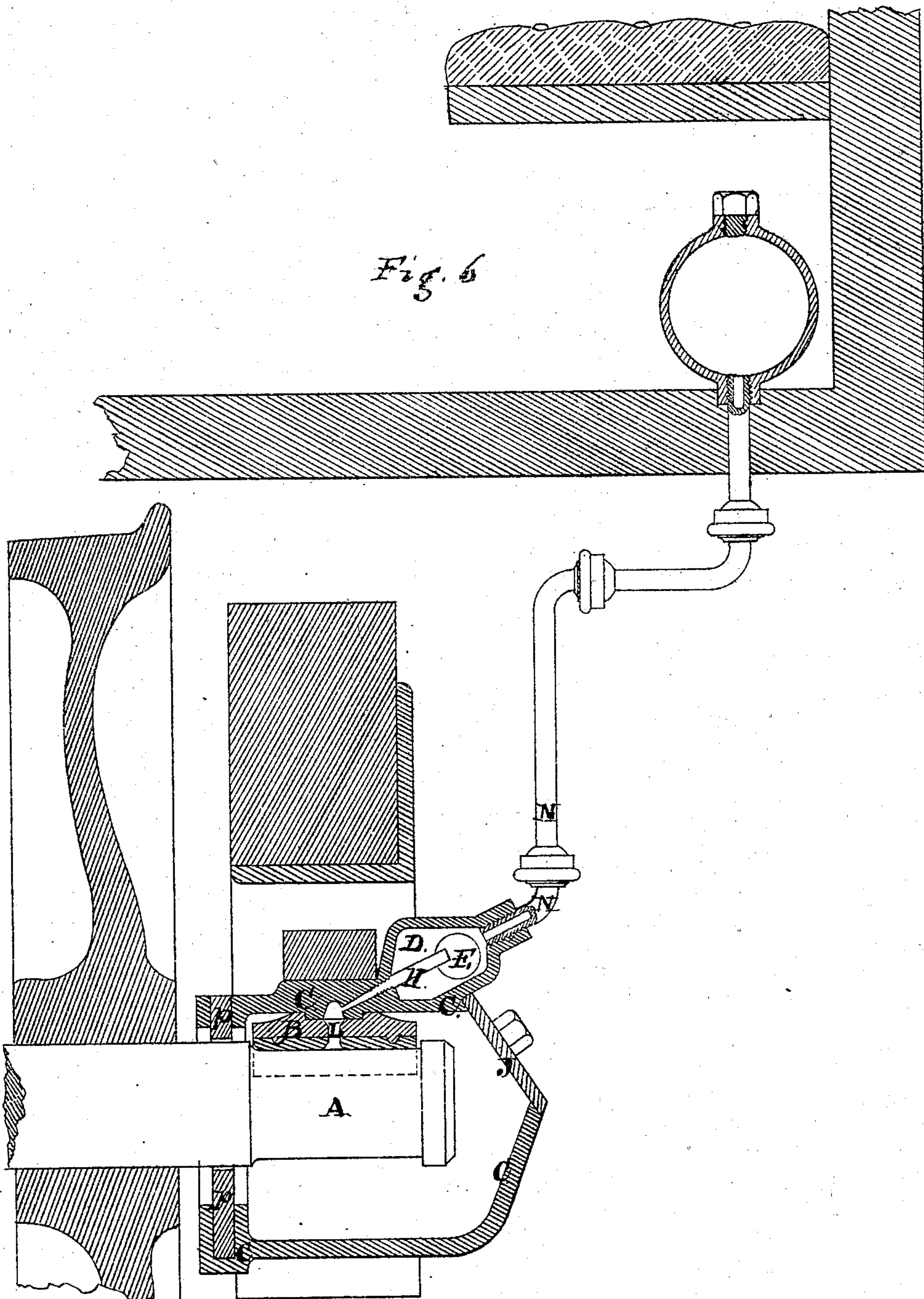
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Fig. 6



Attest,
In. In. Tidd.
Nathan Brown

Inventor,
Stephen F. Gates.

UNITED STATES PATENT OFFICE.

STEPHEN F. GATES, OF CAMBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN CAR-AXLE BOXES.

Specification forming part of Letters Patent No. **138,242**, dated April 29, 1873; application filed August 3, 1872.

To all whom it may concern:

Be it known that I, STEPHEN F. GATES, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Railroad-Car Axle-Boxes, and others having the box-bearing and weight on the top of the axle, of which the following is a specification:

My invention consists of an improvement on what is known as the Tim and Lightner car-box.

The car-axle boxes now in general use are oiled from the under side by filling the box-shell or casing with wool or waste, and turning in a quantity of oil with it while the car is at rest or standing. This answers the purpose as long as the oil touches the under side of the shaft. When the oil gets so low in the box-shell as not to touch the shaft there is no means of adding more without stopping the car, which sometimes cannot be permitted; then the bearing will run dry and heat, which is not discovered until the box is hot or the bearing smokes, and sometimes takes fire while running. By placing an air-tight oil box or fountain on the top of the box-shell I obviate this difficulty, and feed the bearing with oil when oil is required, and while the car is running.

Description.

Figure 1 is a vertical section of the car-axle, bearing-box, oil-fountain, and feeding device. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a vertical section of the box as shown in Fig. 1, having the feed-pipe attached. Figs. 4 and 5 are sections of that part of the oil-fountain showing the manner of putting in the glass peep-holes. Fig. 6 is a vertical section having the feed-pipe attached, and leading from the air-tight main fountain or reservoir located within the car, or upon its platform.

A, the journal of the car-axle; B, the box or bearing on the top of the axle, with a small hole through it, as seen at L; C C C, the box-shell or outside casing; J, the cover to the shell C; D, the oil-fountain attached to the casing C; E, the glass plates fitted into each end of the oil-fountain, to look through, or for peep-holes; K, the plug-screw in the oil-foun-

tain D; H, the valve or feed-regulator within the oil-fountain D, and which may be employed or not, as preferred; P, a plate of wood or leather packing around the shaft; N, the feed-pipe attached to the oil-fountain; *a* and *b*, brass rings to hold the plate-glass E in place, and keep them oil-tight.

When the box-shell C and the box B are in place under the car, and the shell C has been filled with oil-saturated wool or cotton waste, and the box-casing or shell has been so far filled with oil as to touch the lower part of the axle-journal A, in the usual manner, the fountain D is then filled with oil, the valve or feed-regulator H is opened a little so as to leave a passage into the hole or aperture L from the fountain D, and through this aperture to convey the oil onto the top of the axle-bearing and journal. After this has been done, put in the plug-screw K, or shut up the oil-fountain D air-tight; then put on the box-shell cover J, and this arrangement is ready for use.

Operation.

When the oil-fountain D is full of oil, no light can be seen through the glass plates E E. The shaft at first will use the oil or tallow in the lower part of the box-shell C. As long as the oil touches the lower part of the shaft-journal it will run as in the Tim and Lightner box. When the oil in the shell is wasted by being thrown out, or, if it has been used on the bearing and the shaft does not touch the oil below, then the shaft commences to run dry, the shaft and box-bearing will heat or become worn, this heat is transmitted to the oil and air in the fountain D, and these, consequently, expand. By this means the oil is forced out around the valve H through the aperture L onto the bearing, and, lubricating it at once, and at the time oil is needed, any surplus oil drops from the shaft into the bottom of the casing C, which is added to that already there, and raises the oil so that the shaft revolves in oil again, as it did at first, and thus becomes cooled again. The flowing of oil from the fountain D will then stop. This operation will take but part of the oil in the fountain D. When the oil has been partly discharged, its surface can be seen through the glasses E E; when the oil in the fountain D has gone below

the glasses E E, then the fountain should be filled. By this means we oil the journal or shaft automatically from the feeder D, and when, and only when it is wanted; and when the oil in the box-shell C is not available, and only in such quantity as to supply the deficiency. This supply is furnished when the car is in motion. When the fountain D is cool, air will draw up into it and occupy the space of the discharged oil. This operation will be repeated as often as the shaft heats, and when there is oil in the fountain D, thus making a very economical oiler, and avoiding the delays and vexation of leaving the car anywhere on the road, caused by hot boxes and for the want of oil.

The oil-fountain D can be connected to the car-platform by the pipe N, as seen in Fig. 6, and filled at any time.

The glasses E E are made tight by grinding, and held in place by the rings *a b*.

Claims.

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

1. The air-tight oil-fountain forming a part of the axle-box, as described, and arranged to regulate, automatically, the supply of oil to the axle through the agency of heat, the heat serving to force oil from the box by reason of the expansion of the oil, or of the air and oil in the box, substantially as set forth.

2. The glasses E E applied to the oil-fountain of a car-axle box, substantially as described, and for the purpose specified.

3. The air-tight oil-fountain D, the plug-screw K or its equivalent, and the regulating feed-valve H or its equivalent, in combination with the aperture L, bearing B, and shaft A.

4. The pipe N, in combination with an air-tight oil-reservoir in or upon the car or platform, and with the axle-box, substantially as shown and described.

STEPHEN F. GATES.

Witnesses:

CHAS. HOUGHTON,
EDWARD A. GALBRAITH.