

D. CUMMING.
AXLE BOX, &c.

No. 20,991.

Patented July 27, 1858.

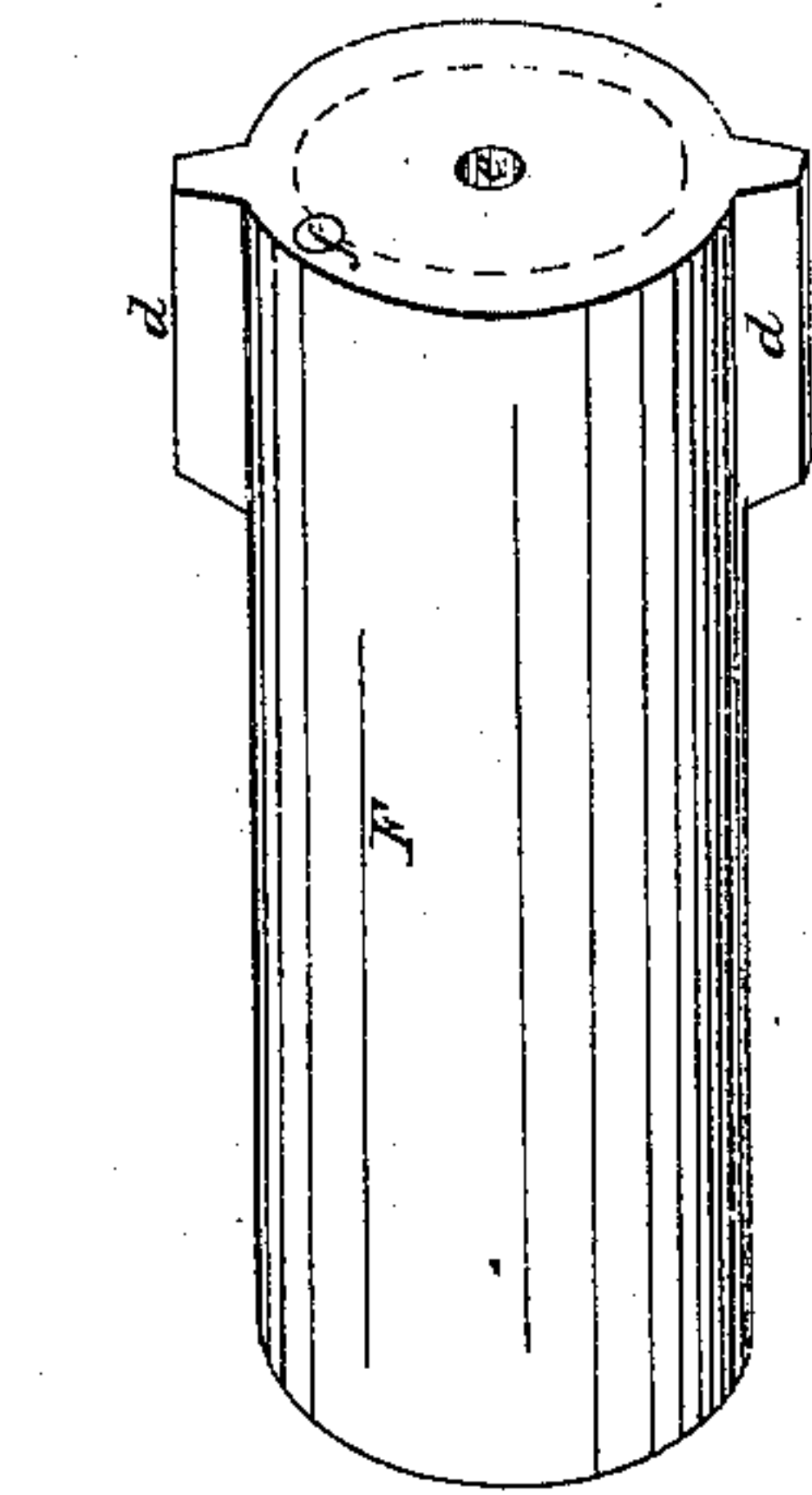


Fig. 1.

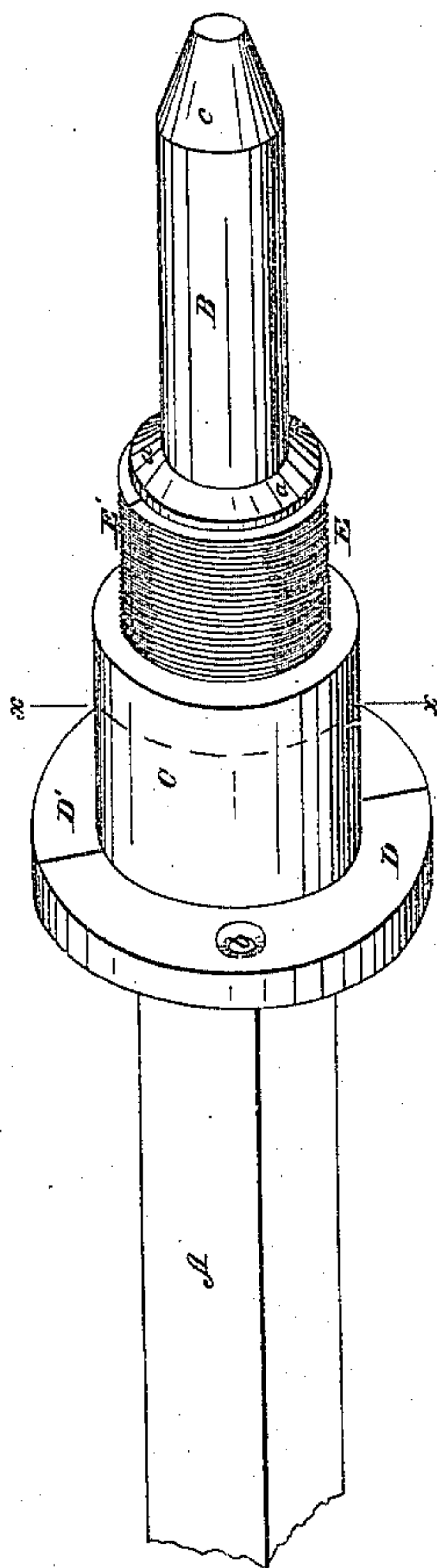


Fig. 2.

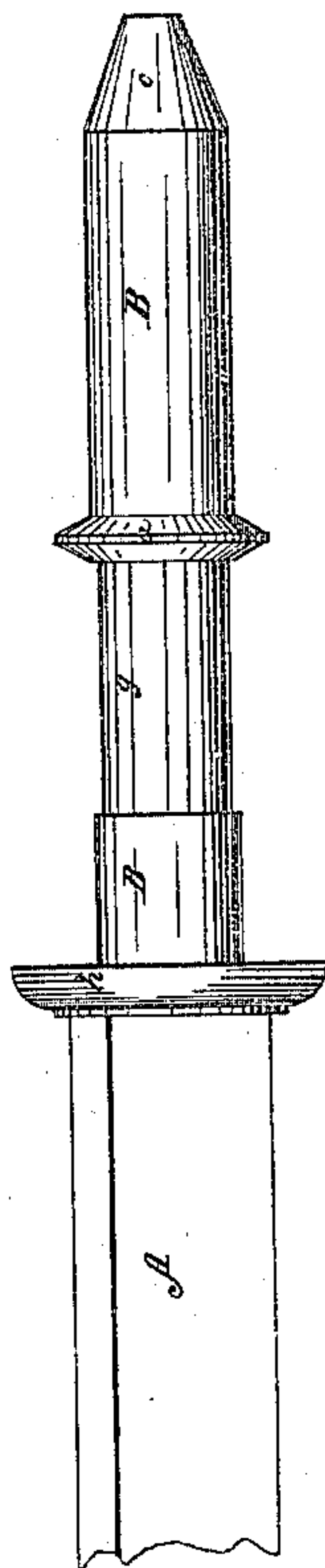


Fig. 3.

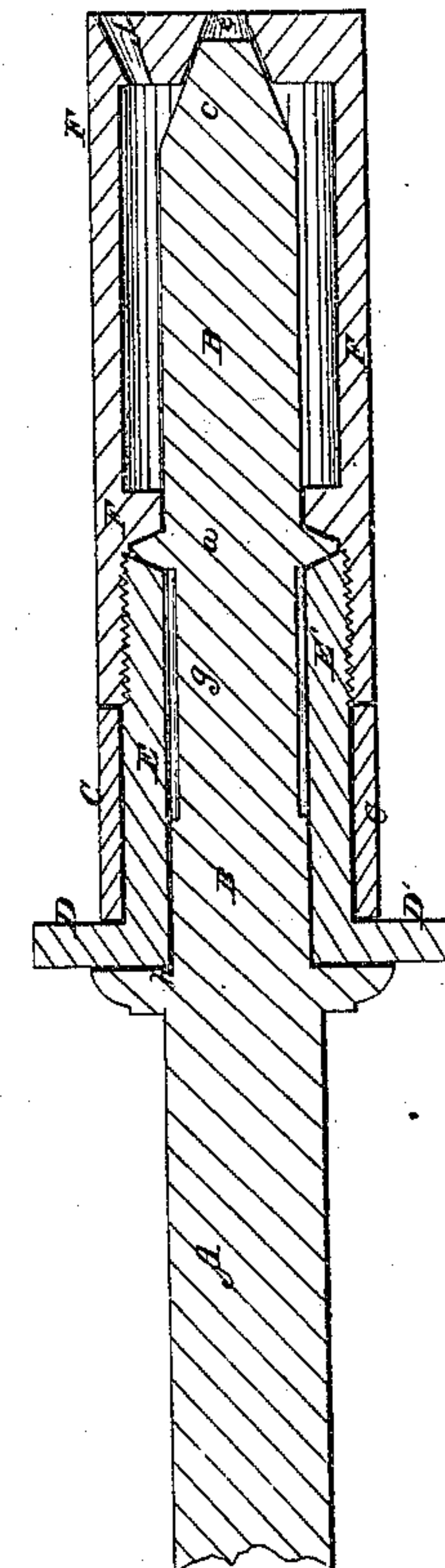


Fig. 4.

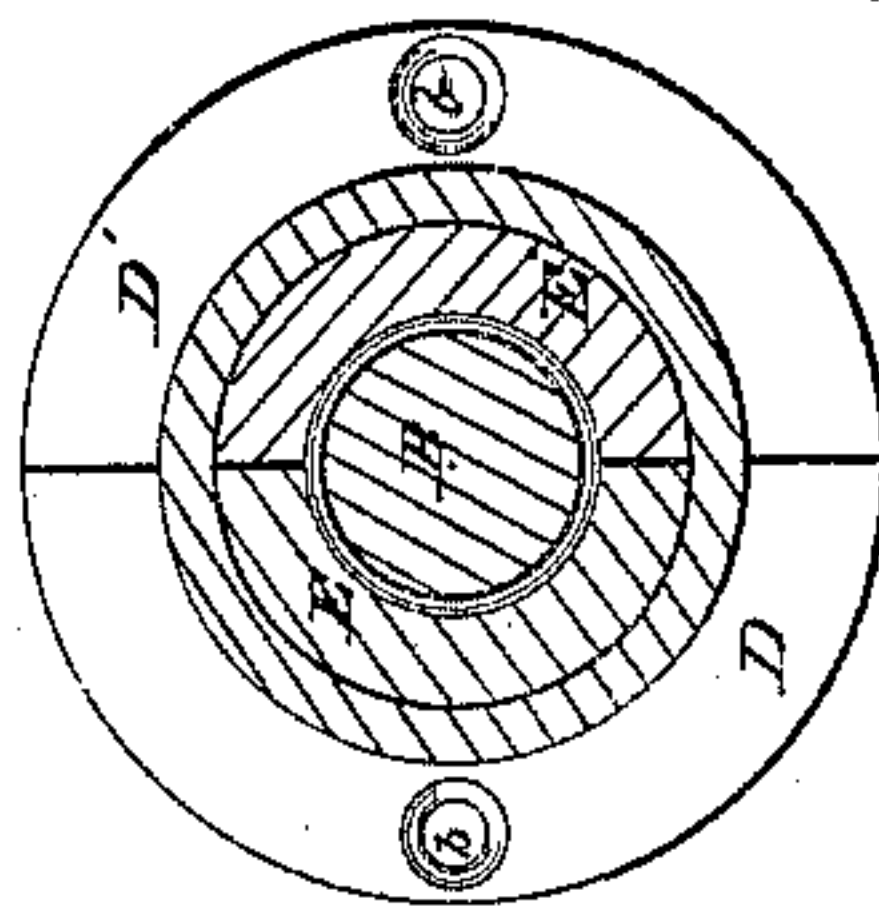
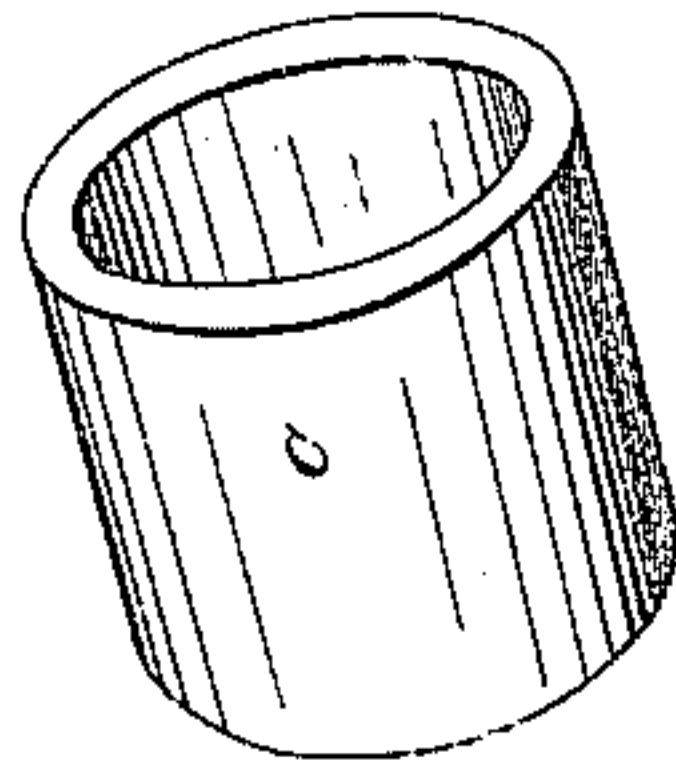


Fig. 5.

Fig. 6.



UNITED STATES PATENT OFFICE.

D. CUMMING, OF SORREL HORSE, PENNSYLVANIA.

AXLE-BOX, &c.

Specification of Letters Patent No. 20,991, dated July 27, 1858.

To all whom it may concern:

Be it known that I, DAVID CUMMING, residing at Sorrel Horse, State of Pennsylvania, have invented an Improvement in Axle-Boxes, &c., of which the following is a description.

The nature of my additional improvement consists in dividing the inner portion of the box into two parts, longitudinally—the said parts being confined upon the shaft by a solid ring—and in the peculiar formation of the outer ends of the axle and box; as will be hereinafter fully described.

To enable those skilled in the art to make and use my invention I will proceed to describe its construction and operation.

In the accompanying drawings forming part of this specification Figure 1, represents a perspective view of my improved box and axle, with the outer end of box detached from axles; Fig. 2, an elevation of the axle; Fig. 3, a vertical longitudinal section through the center of axle and box; Fig. 4, a view of one-half of the “inner portion,” of box; Fig. 5, a vertical section on the line *x, x*, Fig. 1; Fig. 6, a perspective view of the ring which confines the two halves of the “inner portion” of box, to the axle; similar letters denoting the same parts in different views.

A, represents the “axle tree” proper or that portion of the axle which is attached to the carriage; B, is the axle proper, or that portion on which the box and wheel runs. The portion A, it will be seen, is square, while that marked, B, is round, forming a journal. It will be observed from the drawings that near the center of the journal portion B, there is formed a V collar *a*, and that from the inner side,—or side nearest the square portion of the axle—of this collar the diameter as shown at, *g*, to the extent and for the distance, longitudinally, as seen at Figs. 2 and 3. The outer end of the axle is tapered off or made in the form of a frustum of a cone as shown at, *c*, and the square part A, has formed upon it, where it joins the round part B, a collar, *h*.

E, E', are the two halves of the “inner portion” of the box, the peculiar shape of which is best comprehended by reference to the drawings. They are so formed as that when in position on the axle their projecting ribs D, D', form a continuous cylindrical flange and their internal surfaces conform to

the large portion B, of the axle. By virtue of this formation of the box portions E, E', with a uniform, internal diameter, and the axle, B, with a reduced portion, *g*, an oil receptacle, *i*, or space, is created, around the axle B. On the exterior of the shells, or portions, E, E', of the box, is cut a screw thread from the outer ends extending toward the ribs D, D', and nearly half way to said ribs.

C, is the solid ring or clasp, which holds the two parts E and E', upon the axle B, in the position as shown in Fig. 3, and Fig. 1.

F, is the outer portion of the box, which is made in one piece as seen in perspective at Fig. 1, and is furnished with projecting ears, *d, d*, which are intended to fit into corresponding cavities in the box of the wheel hub, to keep the latter from turning upon it. The internal arrangement or formation of this portion F, of the box may be best understood by reference to Fig. 3, when it will be seen that said portion of box is so shaped as to conform with the shape of collar, *a*, and to the diameter of axle B, for a very short distance adjacent to said collar; being the rest of the way much greater in diameter than the axle, B, whereby an oil space, *k*, is created around said axle, to which oil is fed by means of an oil hole, *f*, in the outer end of the box F. It will be observed that a portion of the box F, projects over and around the outer ends of the portions E, E'. On the interior of this projecting portion is cut a screw thread forming a female or nut for the thread on the exterior of the ends of the parts E, E', and by which male and female screws the two portions of the box, (the inner parts E, E', and the outer F), are united and the V groove formed at their junction made to conform to and perfectly fit the “V” collar, *a*, of the axle. In the outer end or head, of the box F, is bored a tapering hole, *e*, into which the tapering end, *c*, of the axle passes, not fitting closely enough to form a bearing, but simply for the purpose of steadying, said axle against any lurch of the wheel which might injure the collar, *a*, or the box at that point conforming to said collar.

In the construction of the box, as described in the patent granted to me on the twenty-fifth day of November 1836; the inner portion being made in one piece thus rendering it necessary to slip said portion over the shaft, the “shrinking on” of the

collar *h*, became a necessary evil, to avoid which is the object of one part of this invention and which object I accomplish by the construction of the inner portion of the box
5 in two parts, as hereinbefore described; secured by a solid surrounding ring or clasp.

In the construction of the outer end of the axle and box as described in the patent already granted to me as aforesaid, it is
10 necessary to bore out the box to conform to the diameter of the axle, the end of which is made square off, which is objectionable on account of the labor attending such construction. Such arrangement is also objectionable
15 on account of there being no way of tightening the steadying portion of the box which becomes too large by the vibration of the end of the axle in the same. These difficulties in construction, and objections to the
20 arrangement; when completed; are avoided by my present improvement part of which as before stated consists in tapering off the outer end of the axle and forming in the
25 closed or solid end of the box *F*, a tapering hole to accommodate the end of the axle as before described. By this arrangement it will be seen that it is only necessary in the construction of the box *F*, to cast the inside
30 of the same much larger than the axle *B*, with the exception of a small portion or, actual, internal collar, and with a thick or bottle shaped solid end and then introduce an ordinary "drill" and "counter bore" which makes the tapering hole *e*, and
35 finishes the collar, or small portion of said

box down to the required size, and it will also be observed that by this construction of the end of the axle and box, as before described, that as the box *F*, is fed up to the collar *a*, to keep the bearing perfect the
40 tapered hole *e*, is also fed up around the tapered end of the shaft whereby said tapered end *c*, of the axle is always kept sufficiently near contact with the sides of the
45 hole *e*, in end of box *F*.

The operation of my improved box is the same as is also that of the axle with the exception of the difference due to the tapering hole *e*, and end *c*, of axle, causing an adjustment of the said parts relative to each other
50 simultaneously with any adjustment made for the benefit of the bearing collar *a*, as hereinbefore described.

Having described the construction and operation of my improvement what I claim as
55 new and desire to secure by additional Letters Patent is:—

1. The peculiar form of the outer end of the axle:—*c*, and tapering hole *e*, in box *F*, when the said axle and box are arranged
60 relatively to each other as described for the purpose set forth.

2. The combination of the two inner portions *E* and *E'* of the box with the clasp *C*,
65 as and for the purposes hereinbefore described.

DAVID CUMMING.

Witnesses:

HENRY WYNCOOP,
DANIEL JEANES.