

(No Model.)

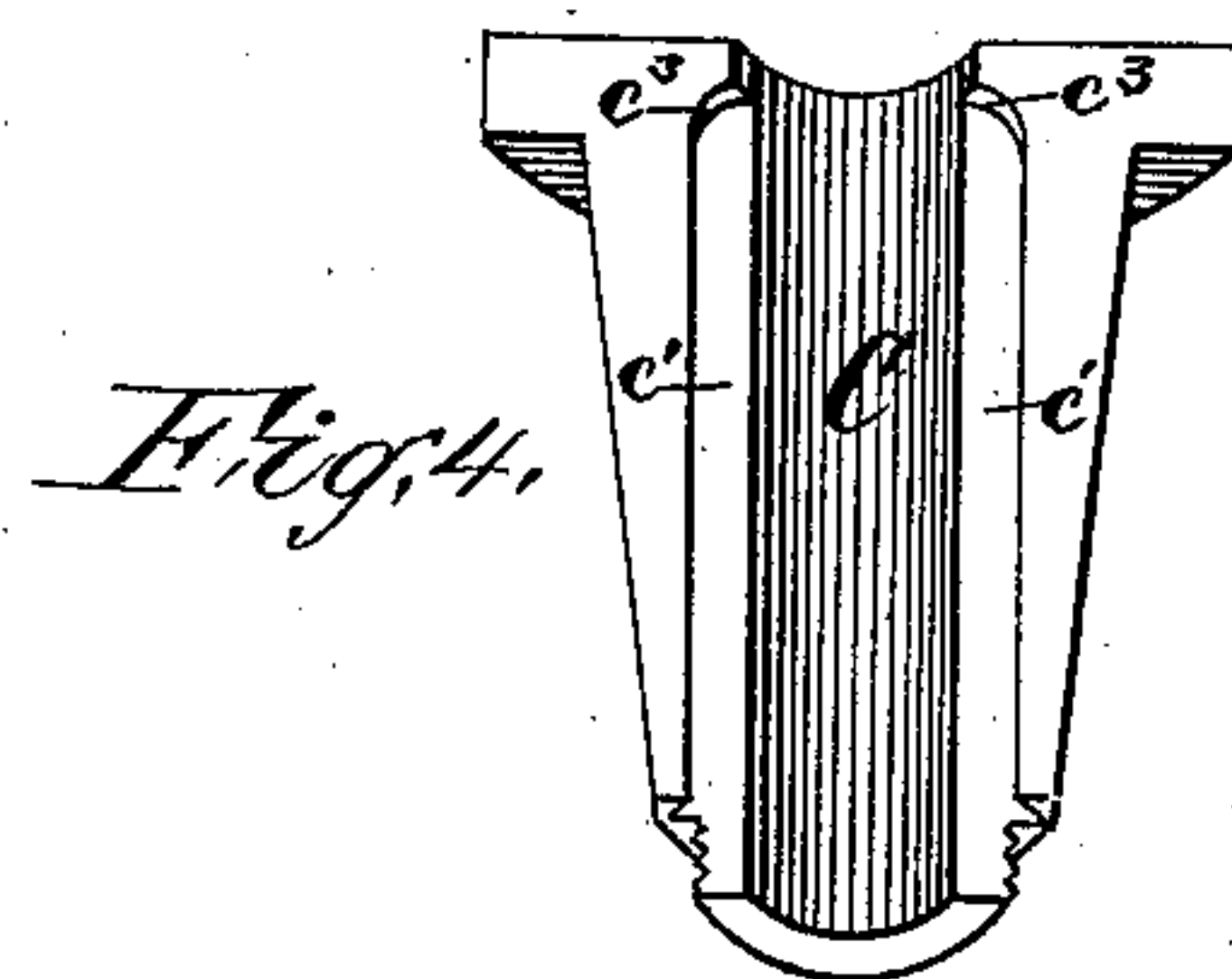
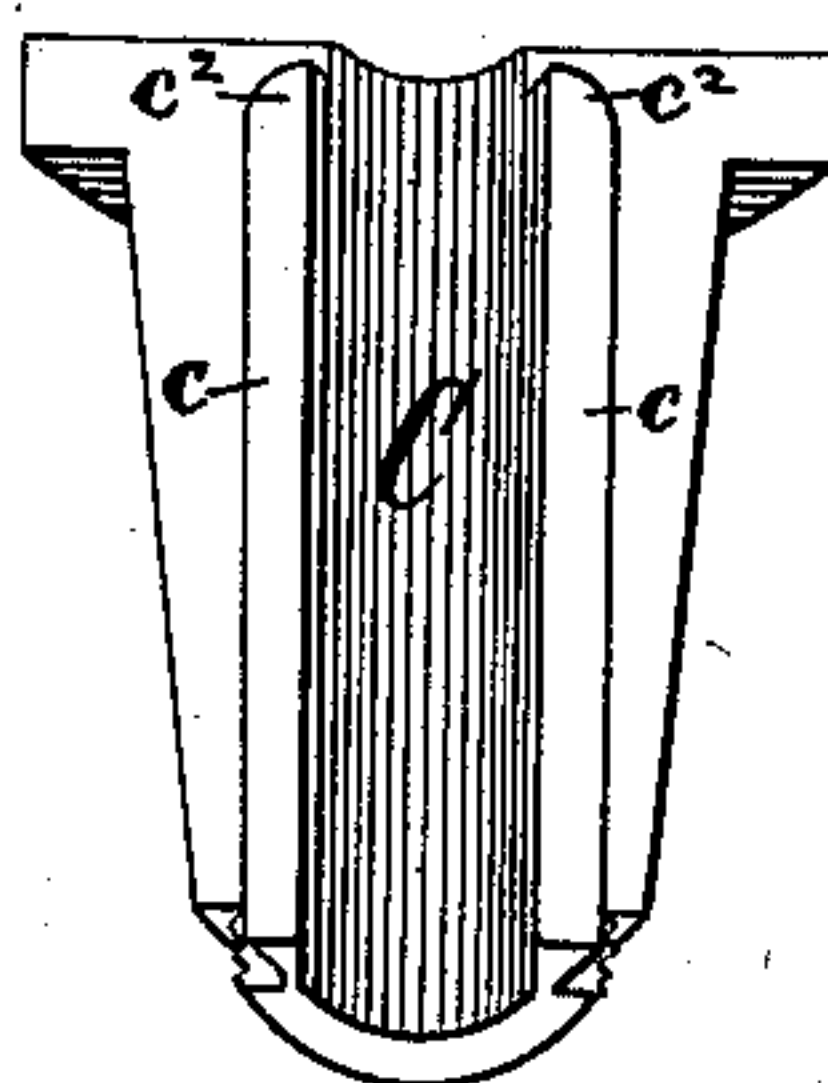
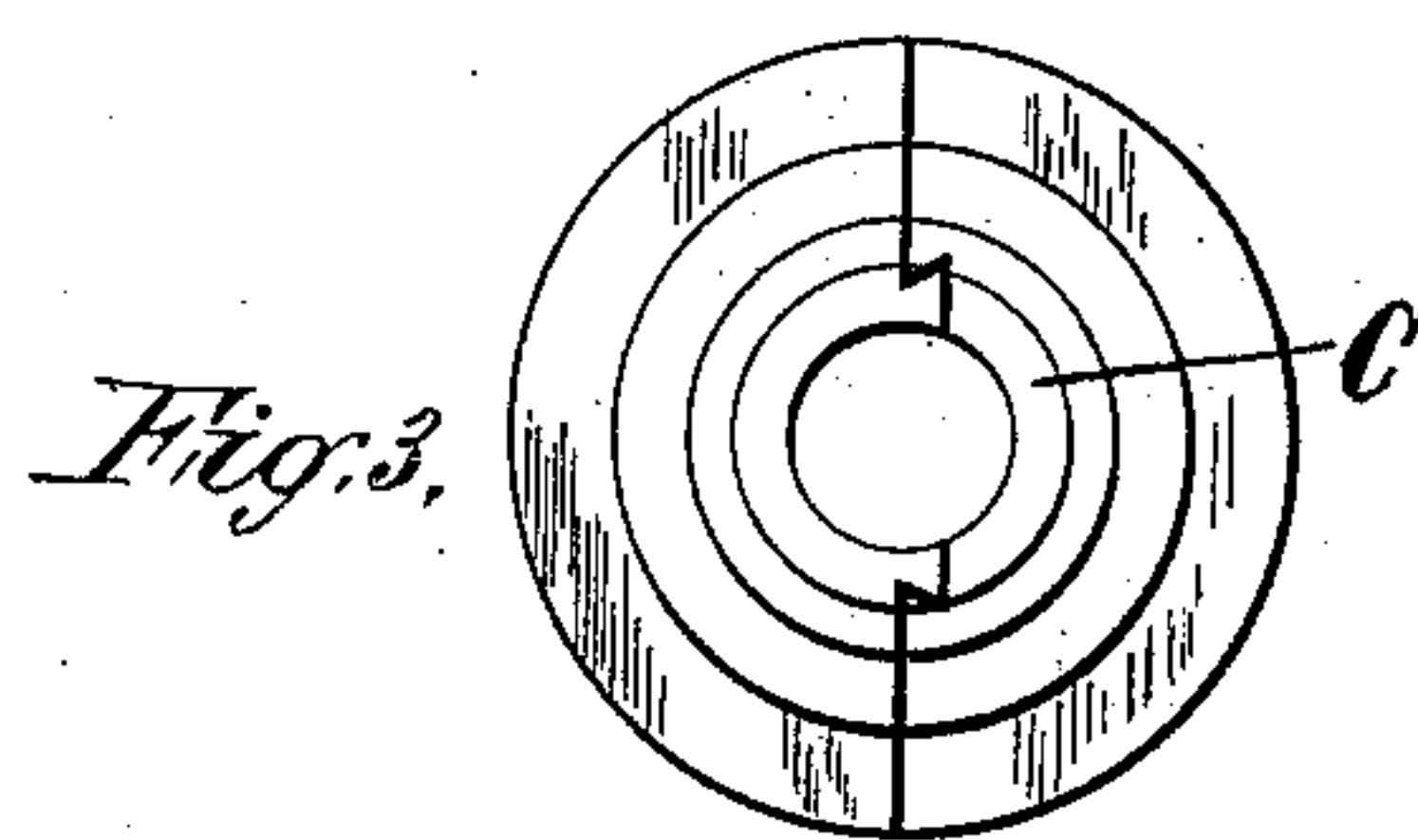
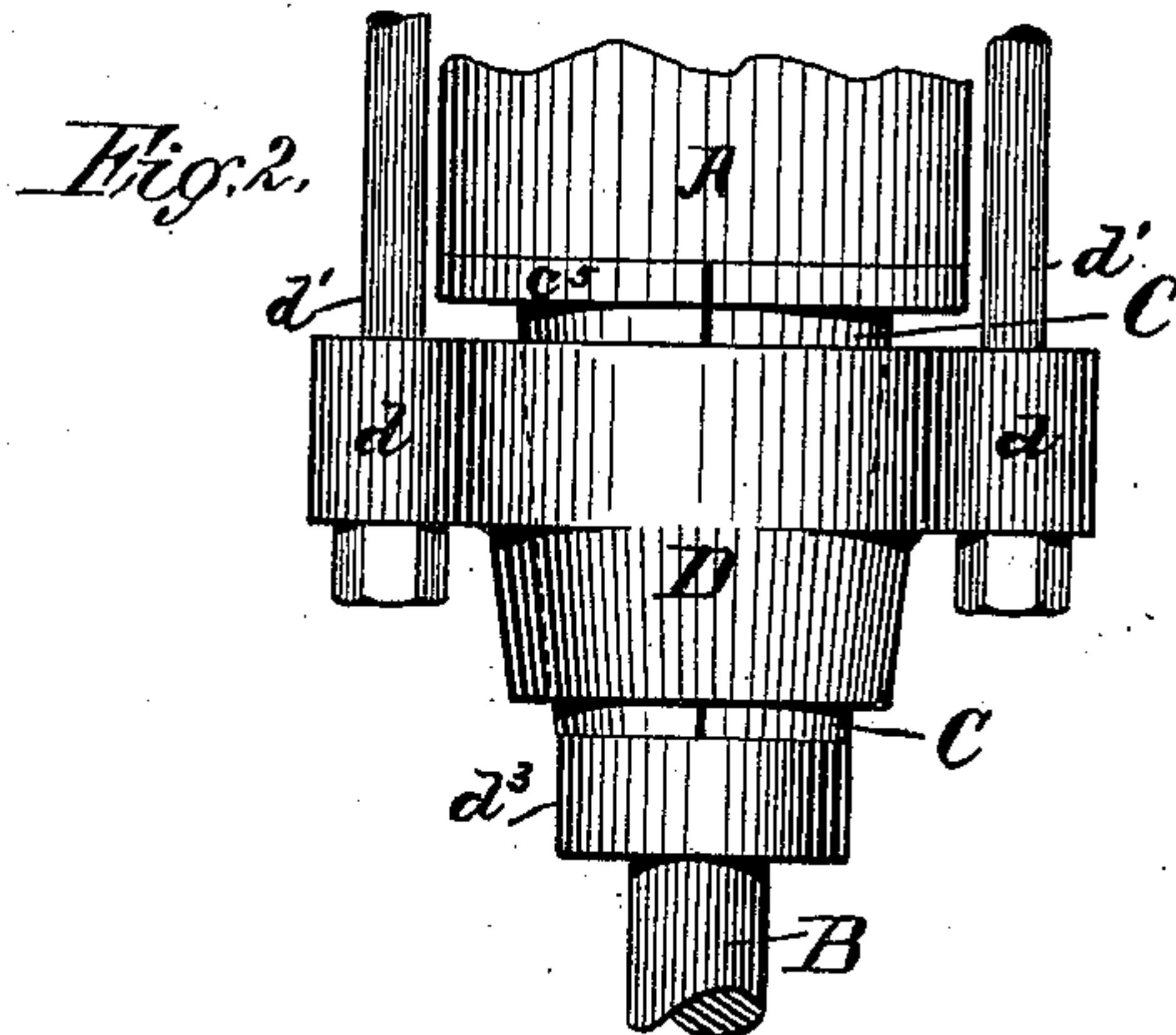
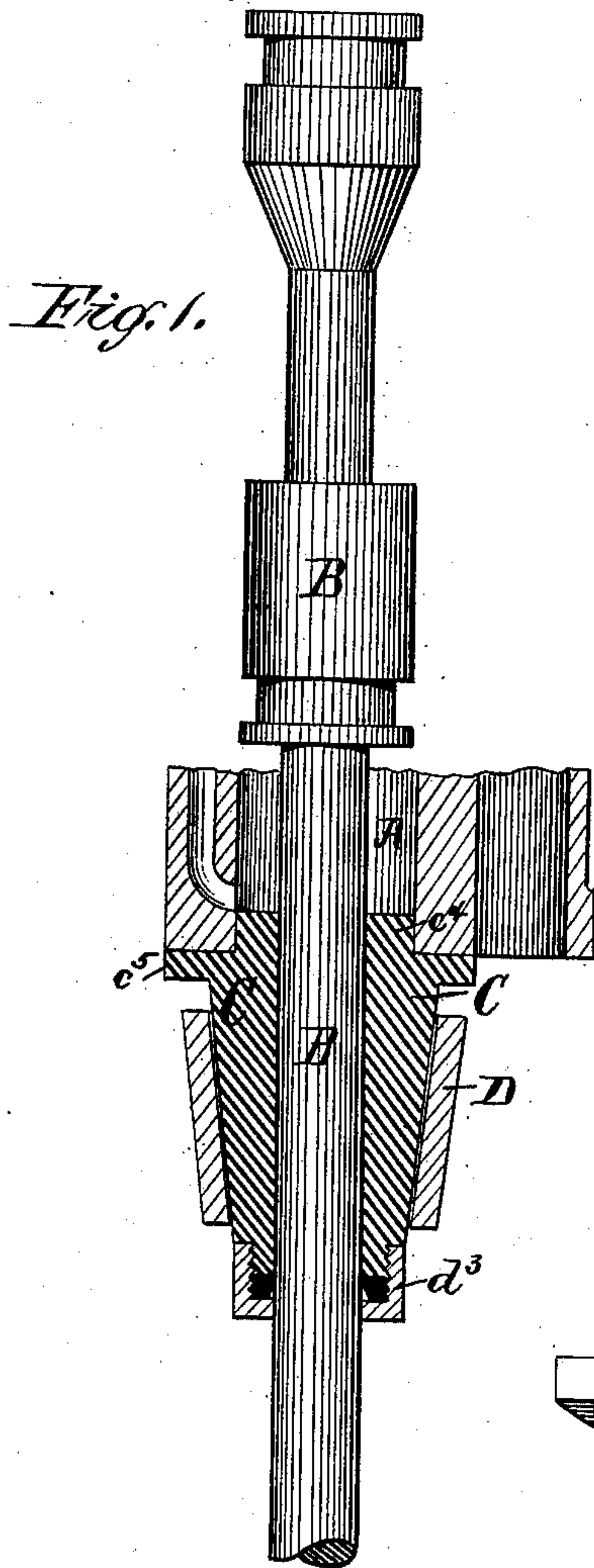
2 Sheets—Sheet 1.

J. MASSETT.

ROCK DRILL.

No. 389,587.

Patented Sept. 18, 1888.



WITNESSES:

*W. Benjamin*  
*A. T. Fales*

INVENTOR

*John Massett*  
BY *Andrew S. Fitch*

His ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

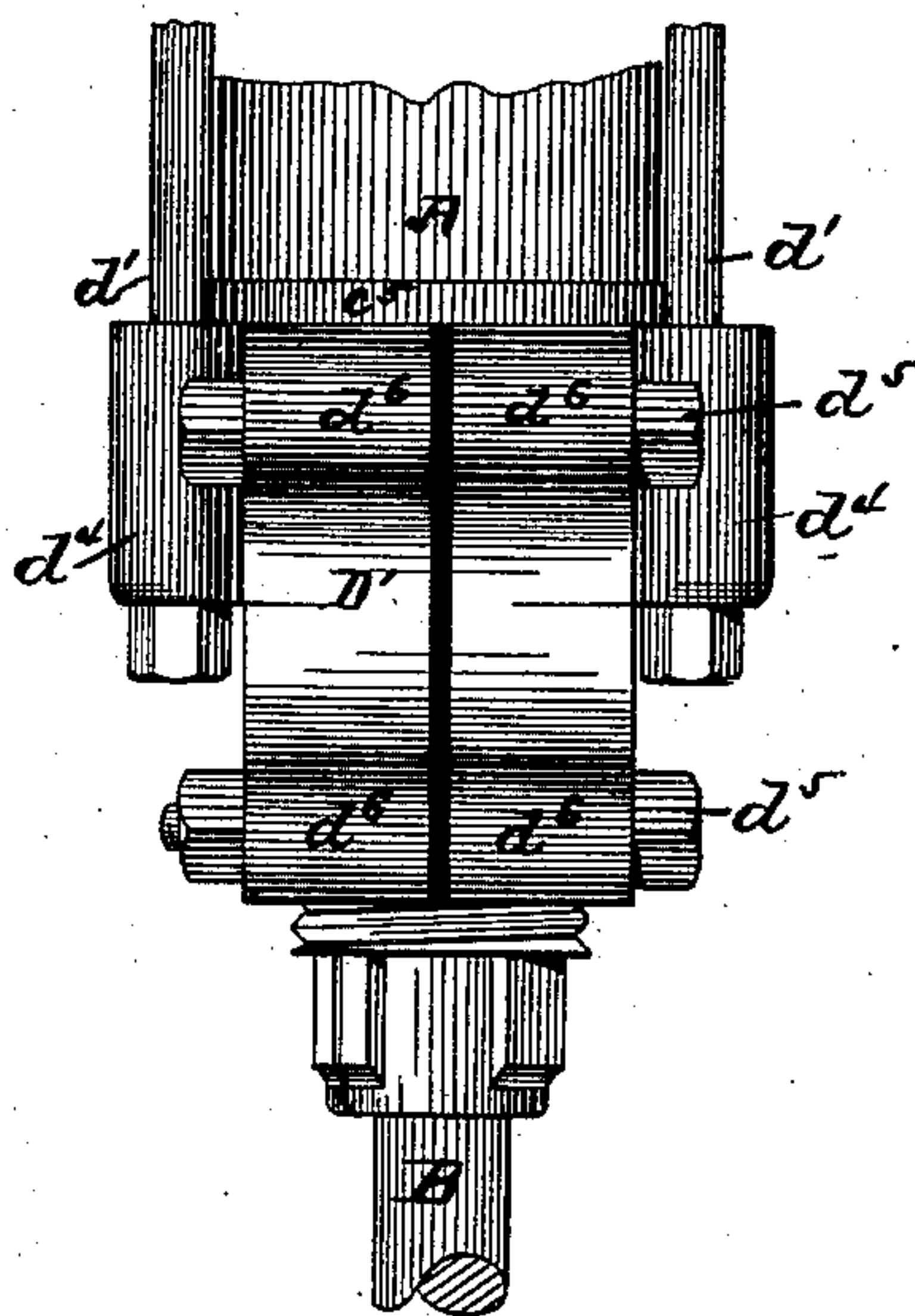
J. MASSETT.

ROCK DRILL.

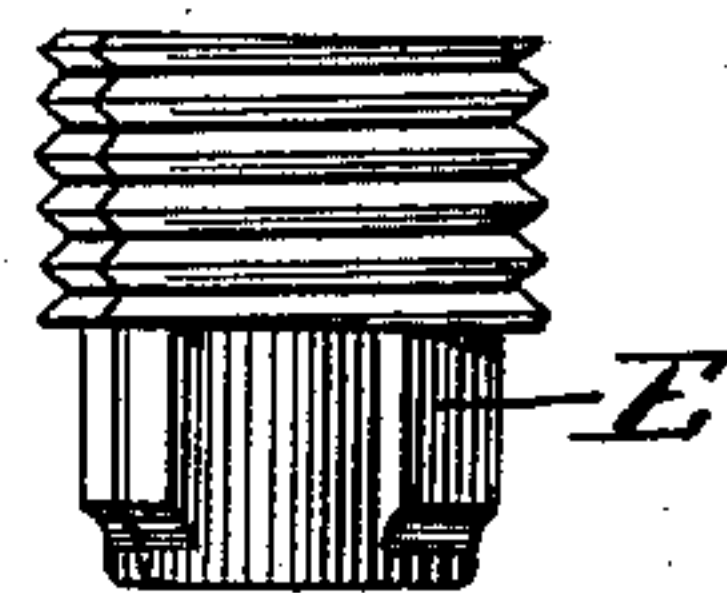
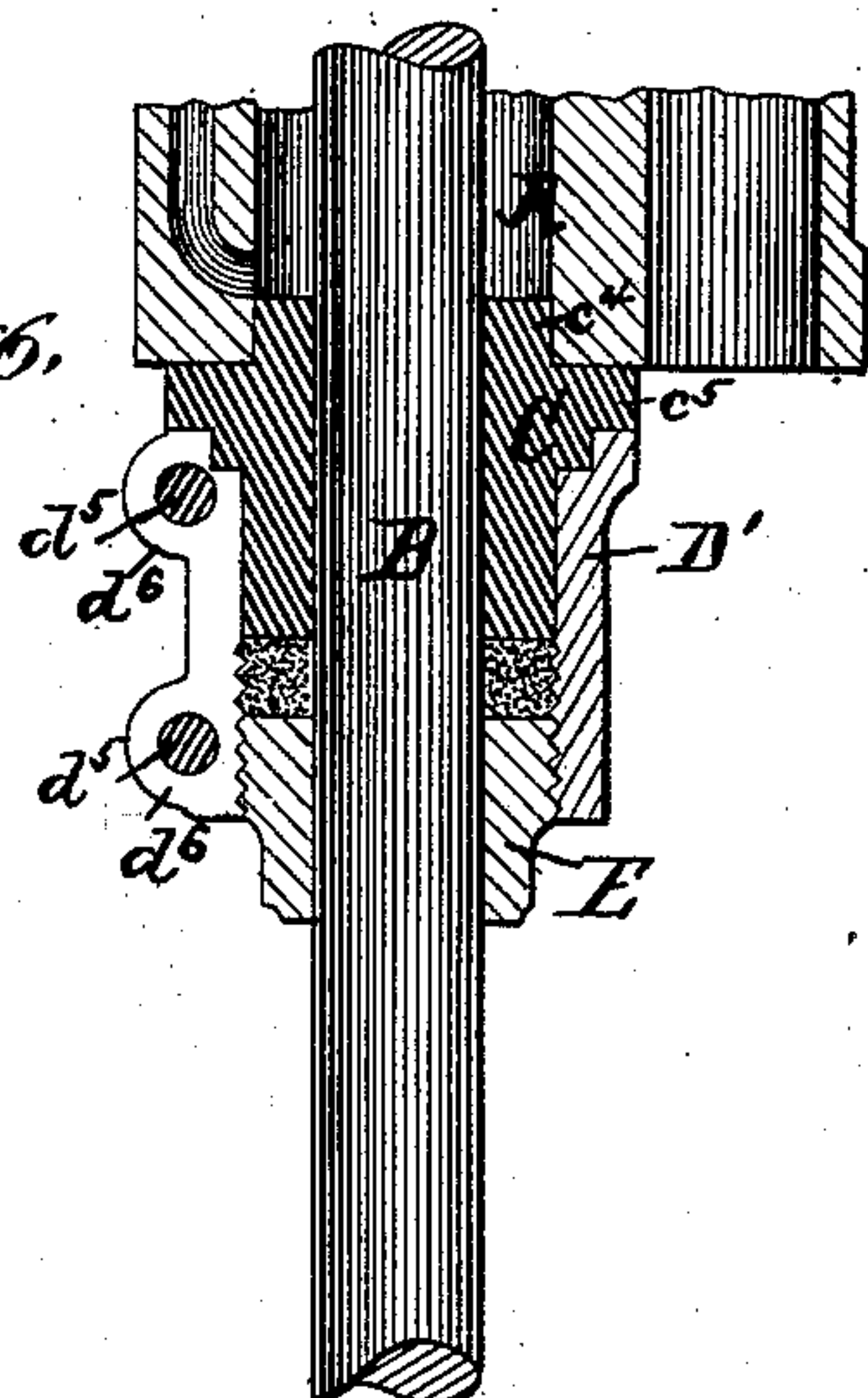
No. 389,587.

Patented Sept. 18, 1888.

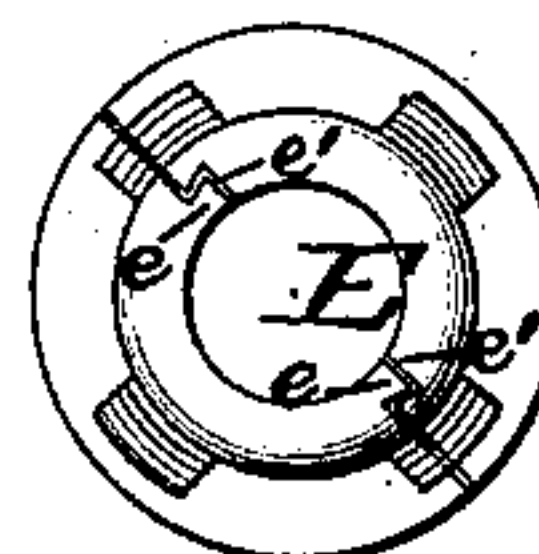
*Fig. 5.*



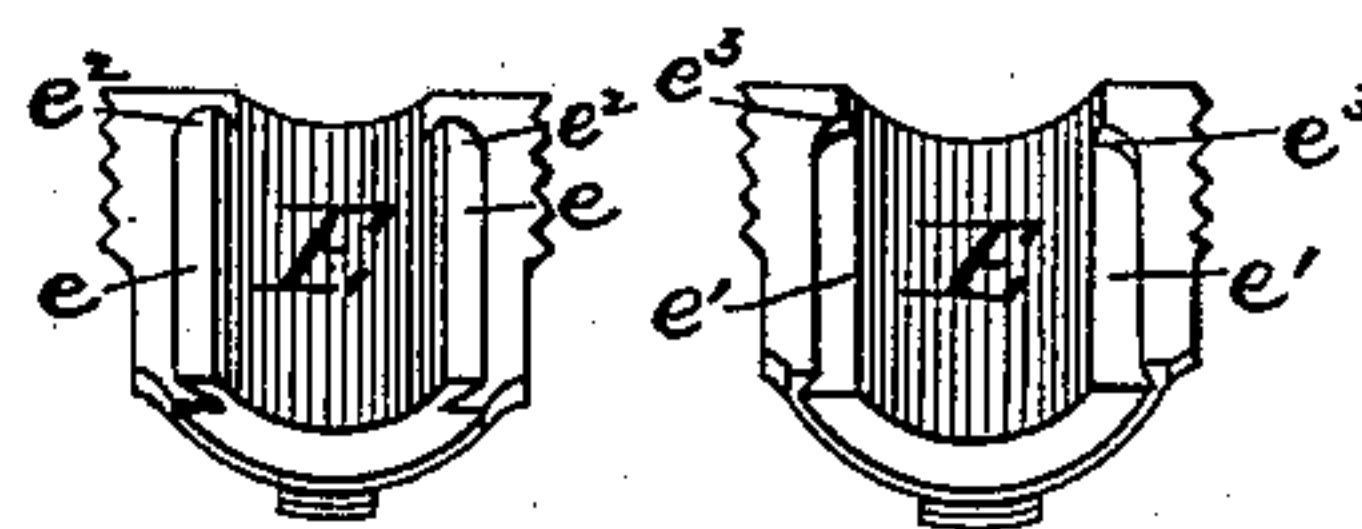
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



*Fig. 9.*

WITNESSES:

*C. W. Benjamin*  
*H. T. Fales*

INVENTOR

*John Massett*  
BY  
*Arthur S. Fitch*  
His ATTORNEY



# UNITED STATES PATENT OFFICE.

JOHN MASSETT, OF NORTH TARRYTOWN, NEW YORK.

## ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 389,587, dated September 18, 1888.

Application filed November 25, 1887. Serial No. 256,058. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN MASSETT, of North Tarrytown, county of Westchester, State of New York, a citizen of the United States, have  
5 invented certain Improvements in Rock-Drills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 My invention relates to a rock-drill in which it is preferred to use a piston formed in one piece with the piston-rod and drill-chuck, and wherein for this purpose the lowest or "front" cylinder-head is divided or split longitudi-  
15 nally, so that by loosening the bolts holding said head the head may be drawn away from the cylinder and access to the interior of the head and the cylinder may be had without otherwise deranging the parts of the drill; and  
20 the object of my invention is to provide the sections constituting or incorporated in the said lower head with readily-separable lock-joint devices, whereby any lateral displacement of such jointed sections by the vibra-  
25 tions of the drill when in operation will be avoided.

Figure 1 is a longitudinal central section of the lower end of the cylinder of a rock-drill and the lower head containing my invention,  
30 the piston and piston-rod being shown in elevation in one piece. Fig. 2 is a side elevation of the same at right angles to the line of the section in Fig. 1. Fig. 3 is a plan of the lower head, looking from below. Fig. 4 is a  
35 view somewhat in perspective of two sections constituting the lower cylinder-head, and disclosing the essential feature of my invention. Fig. 5 is a side elevation of a form of divided cylinder-head and showing my invention as  
40 applied to the divided packing-gland incorporated therein. Fig. 6 is a central longitudinal section of the parts shown in Fig. 5. Fig. 7 is an elevation of the divided packing-gland constructed in accordance with my invention.  
45 Fig. 8 is a plan of the divided packing-gland, looking from the lower end; and Fig. 9 is a view, partly in perspective, of the sections forming the divided packing-gland, and disclosing the essential feature of my invention  
50 applied thereto.

A is the lower end of the drill-cylinder.

B is the piston and piston-rod, which may be in one piece, as shown, and which may have formed in the same piece on the lower end of the piston-rod the drill-chuck. (Not shown.) 55

C is the lower head of the cylinder, which in carrying out my invention I form in sections, the head being divided longitudinally for this purpose, as shown. The desired object is accomplished by constructing the head in  
60 two longitudinal sections, as shown.

Upon the contiguous faces of the sections of the cylinder-head C, I form a sliding lock-joint, so constructed that a projection or projections extending longitudinally of the face of  
65 one section may, when the sections are placed upon and about the piston-rod, the piston being seated in the cylinder, be slid longitudinally into a corresponding groove or grooves formed in the face of the opposite section. 70  
This sliding lock-joint may be formed by the dovetail projections *c*, extending longitudinally of the face of one section, one on each side of the bearing of the piston-rod, as shown in Fig. 4, and by corresponding grooves, *c'*, 75  
extending longitudinally in the face of the opposite section. Thus, when the sections are grouped upon the piston-rod, the projections or ribs *c* on one section may be slid endwise  
80 into the corresponding grooves on the other section, thereby locking the sections together with a joint which will prevent the locked sections from being laterally displaced relatively to each other by the vibrations of the machine when in operation, and which also 85  
permits the easy separation of the sections at any time by simply sliding the ribs *c* endwise out of the grooves *c'*. While I find the described dovetail locking-ribs and grooves described the preferable means for providing the  
90 sliding lock-joint for the sections, I do not limit myself to such described forms. Any known and equivalent devices for constituting the sliding lock-joint may be employed.

It is desirable that the locking-ribs *c* should 95  
terminate in a shoulder, *c*<sup>2</sup>, somewhat below the upper end of the section of the head C, on which they are formed, and that the corresponding grooves, *c'*, in the opposite section should similarly terminate in an abutment, *c*<sup>3</sup>, 100  
so that by the shoulder *c*<sup>2</sup> striking the abutment *c*<sup>3</sup> the movement of the ribs in the grooves



in sliding the sections together is limited or stopped when the sections are properly and correctly united to form the head.

The head C, composed of the locked sections, 5 as described, may have the projecting shoulders  $c^4$  fitting into the lower end of the cylinder A, and the annular flange  $c^5$  fitting against said end of the cylinder; and to enable the divided head to be held to the cylinder it may 10 be made exteriorly somewhat conical or tapering from above downward, as shown in Figs. 1 and 2, and a correspondingly conical ring, D, may be passed from below upward around the joined sections, and this ring may carry 15 wings  $d$ , through which the bolts  $d'$ , extending to the upper head or cross-piece (not shown) pass, thus bolting the parts together. The lower end of the united sections of the head C may be cylindrical and externally threaded to 20 receive an ordinary gland,  $d^3$ , screwed thereon, or this gland may be dispensed with and any other suitable form of packing may be employed.

In place of the ring D, a split clamping-ring, 25  $D'$ , as shown in Figs. 5 and 6, may be employed, said ring  $D'$  being provided with the wings  $d^4$  for the bolts  $d'$ , as hereinbefore stated, and this split ring  $D'$  may be cylindrical and be clamped upon the united cylindrical sections of the head C, (seen in Fig. 6,) which 30 may be lock-jointed, as hereinbefore described, the clamping being accomplished by screw-bolts  $d^5$ , passed through ears  $d^6$ , arranged on each side of the division or split in the ring  $D'$ . When thus arranged, the head may be 35 opened without derangement of the other parts of the drill by releasing the ring  $D'$  from the bolt-rods  $d'$ , loosening the bolts  $d^5$  and sliding the ring down from the head C, and then sliding the sections composing the head C apart 40 endwise.

At E is shown a divided packing-gland constructed in accordance with the essential feature of my invention, and which is well 45 adapted for use in connection with any lower cylinder-head in a drill, in which said head is longitudinally divided or split. The gland is formed in sections, and the sections are lock-jointed together, preferably by means of the 50 dovetail ribs  $e$  on one section, terminating near the top of the section in shoulder  $e^2$ , and the corresponding grooves,  $e'$ , on the opposite section, terminating similarly in the abutment  $e^3$ , as shown in Fig. 9. The united sections 55 are threaded externally, so as to be screw-seated in the lower head or its holding-ring, as shown in Fig. 6. By means of this lock-joint of the sections of the gland the sections are prevented from being displaced laterally 60 in their seat in the cylinder-head by the vibrations of the machine when in operation.

I do not limit myself to the described devices for sustaining the united sections of the cylinder-head and detachably attaching the same to the cylinder, as it is evident that any 65 known devices for this purpose may be employed without variation of the essential feature of my invention, which is the separable lock-joint for the described sections.

I am aware that rock-drills have been heretofore constructed with lower heads to the cylinder in longitudinal sections, and with glands for lower heads in similar sections, and hence I do not intend to claim herein, broadly, a 75 rock-drill with either its entire lower head or the gland thereof constructed in longitudinal sections, but wish to be understood as claiming a lower head or a gland therefor, the longitudinal sections composing which are formed or provided with separable lock-joint devices, 80 substantially as described.

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

1. In a rock-drill, the combination, with the cylinder, piston, and piston-rod, of a cylinder-head composed of longitudinal sections provided with separable lock-joint devices for 85 separably uniting the sections, and a holder for sustaining the sectional head, and provided with means, substantially as described, for detachably attaching the head to the cylinder, 90 as and for the purpose set forth.

2. In a rock-drill, the combination, with the cylinder, piston, and piston-rod, of a cylinder-head composed of longitudinal sections provided with separable lock-joint devices for 95 separably uniting the sections, and motion-limiting devices for stopping the movement of the sections longitudinally of one another in locking them together at a predetermined point relatively to each other, together with 100 a holder for sustaining the sectional head, and provided with means, substantially as described, for detachably attaching the head to the cylinder, as and for the purpose set forth. 105

3. In a rock-drill, the combination, with the cylinder, piston, and piston-rod, and a longitudinally-divided cylinder-head provided with means, substantially as described, for sustaining the united sections thereof and detachably 110 attaching the same to the cylinder, of a packing-gland composed of longitudinal sections provided with separable lock-joint devices for separably uniting the sections of the gland, as and for the purpose set forth.

JOHN MASSETT.

Witnesses:

V. M. BRASCHI,  
N. J. BARNUM.

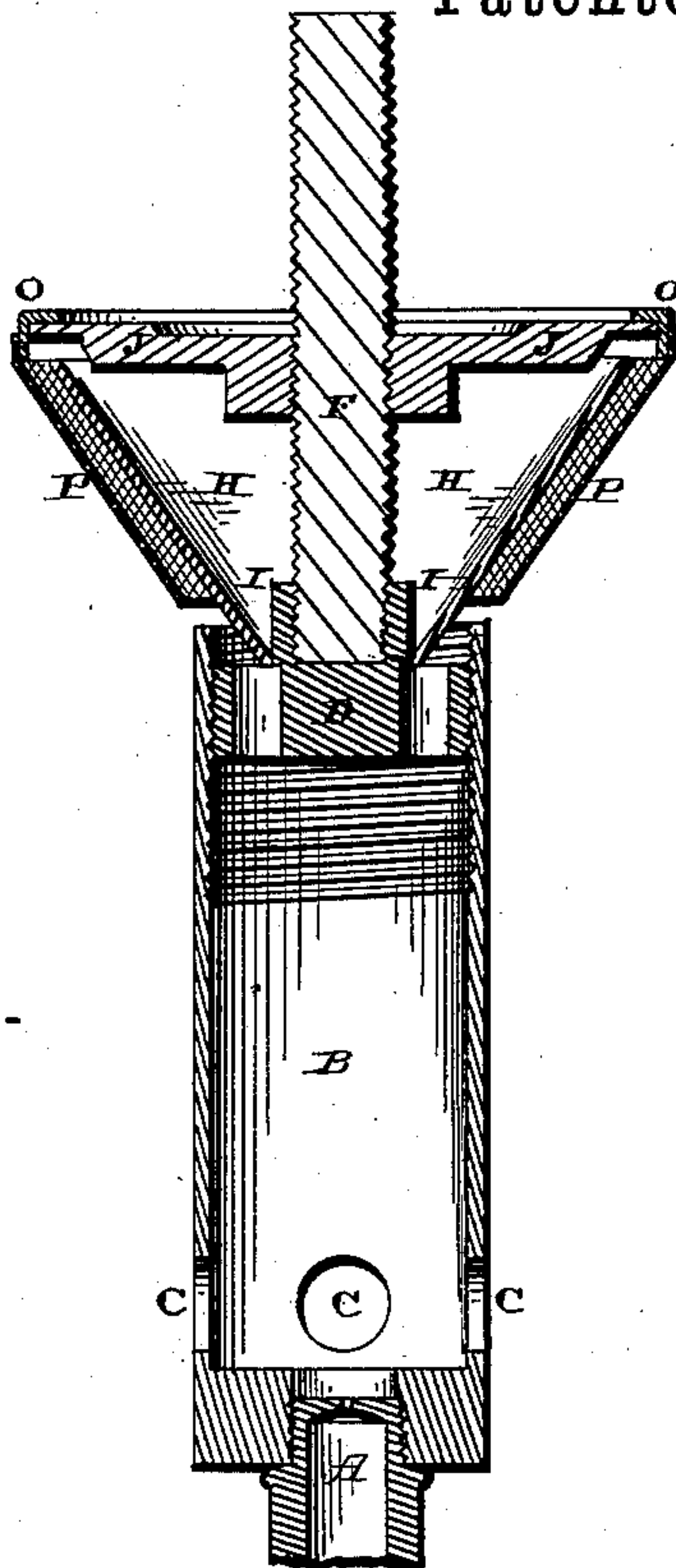


(No Model.)

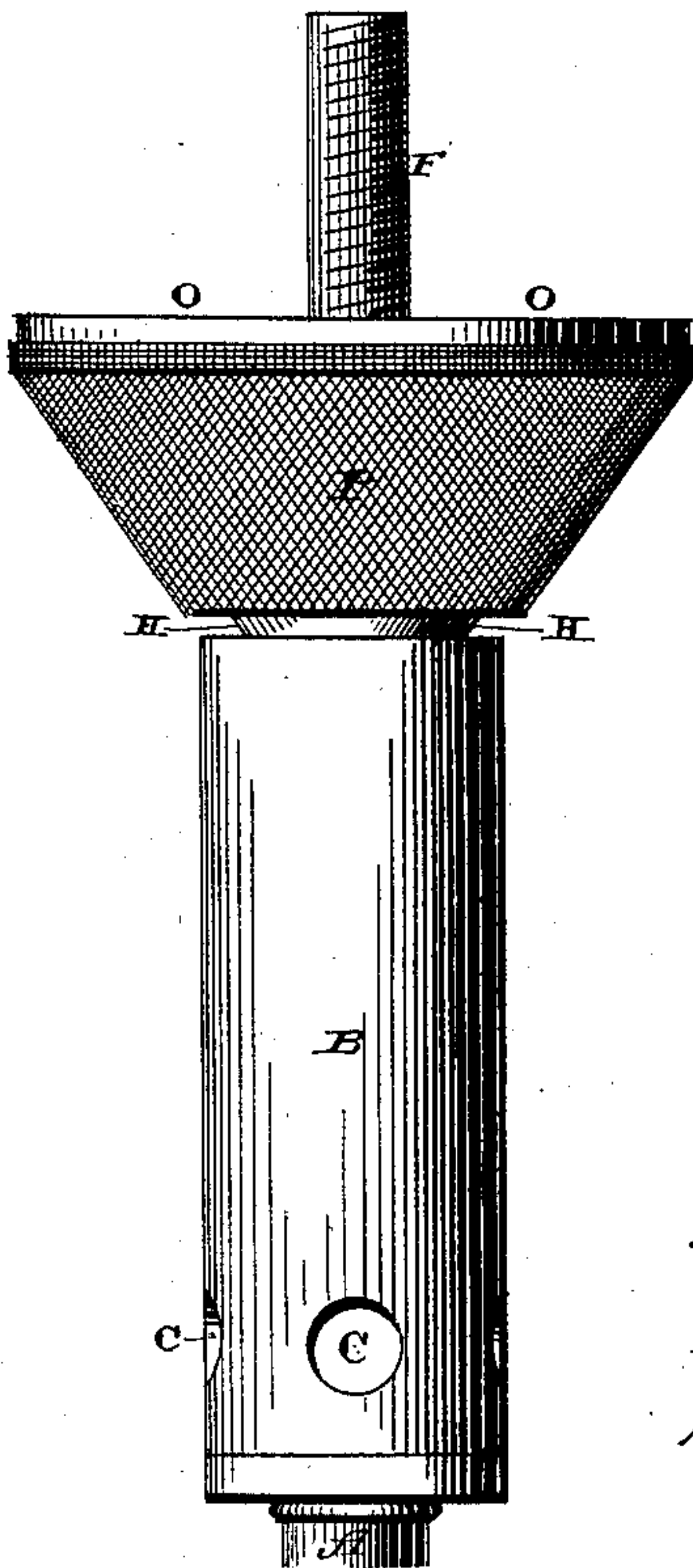
W. J. McNORTON.  
INCANDESCENT GAS BURNER.

No. 389,588.

Patented Sept. 18, 1888.



*Fig. 1.*



*Fig. 2.*

Witnesses.  
*R. D. Gardner*  
*Edw. P. Ellis*

Inventor.  
*Wm. J. McNorton,*  
per *J. A. Lehmann, atty*