

(No Model.)

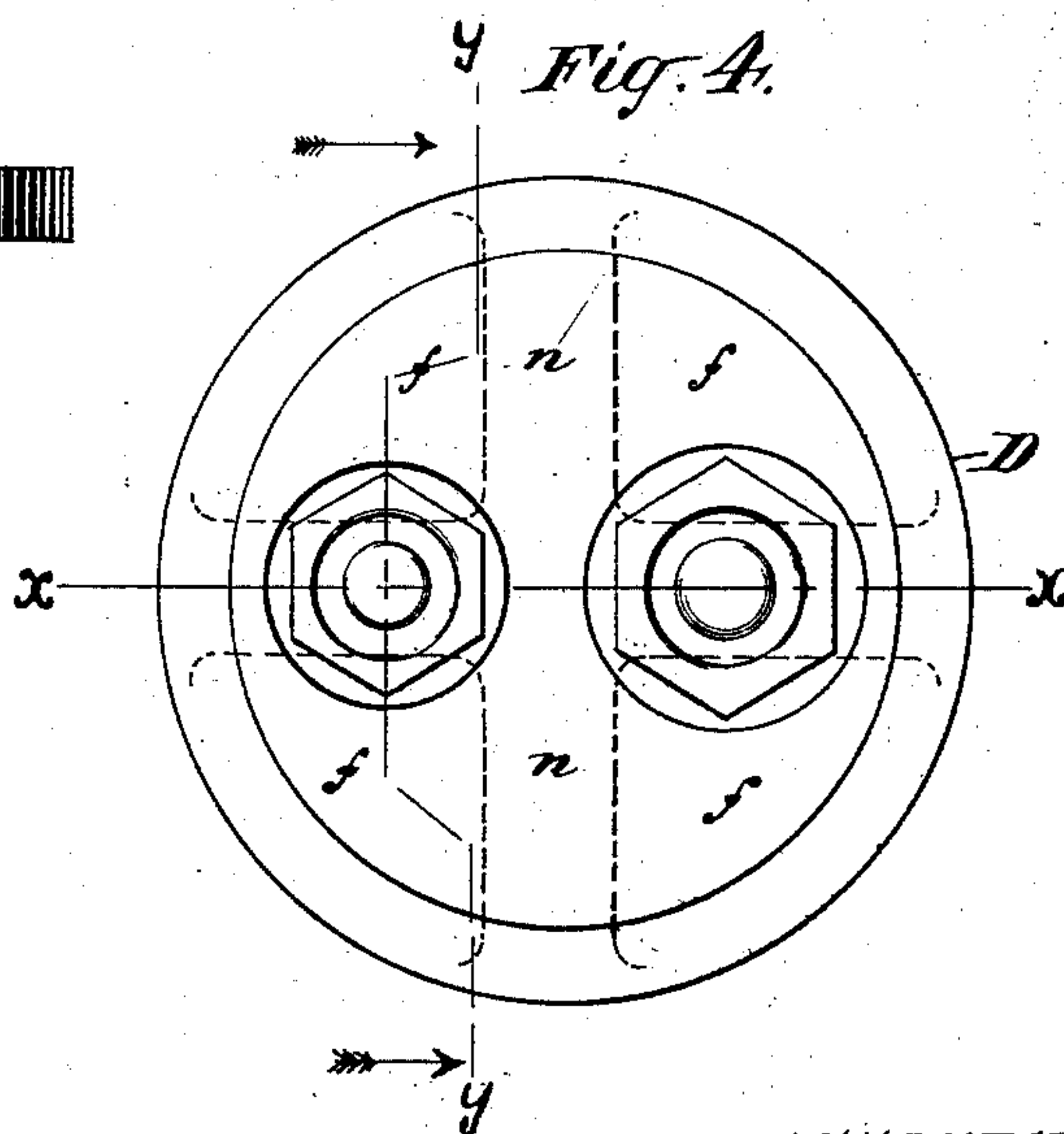
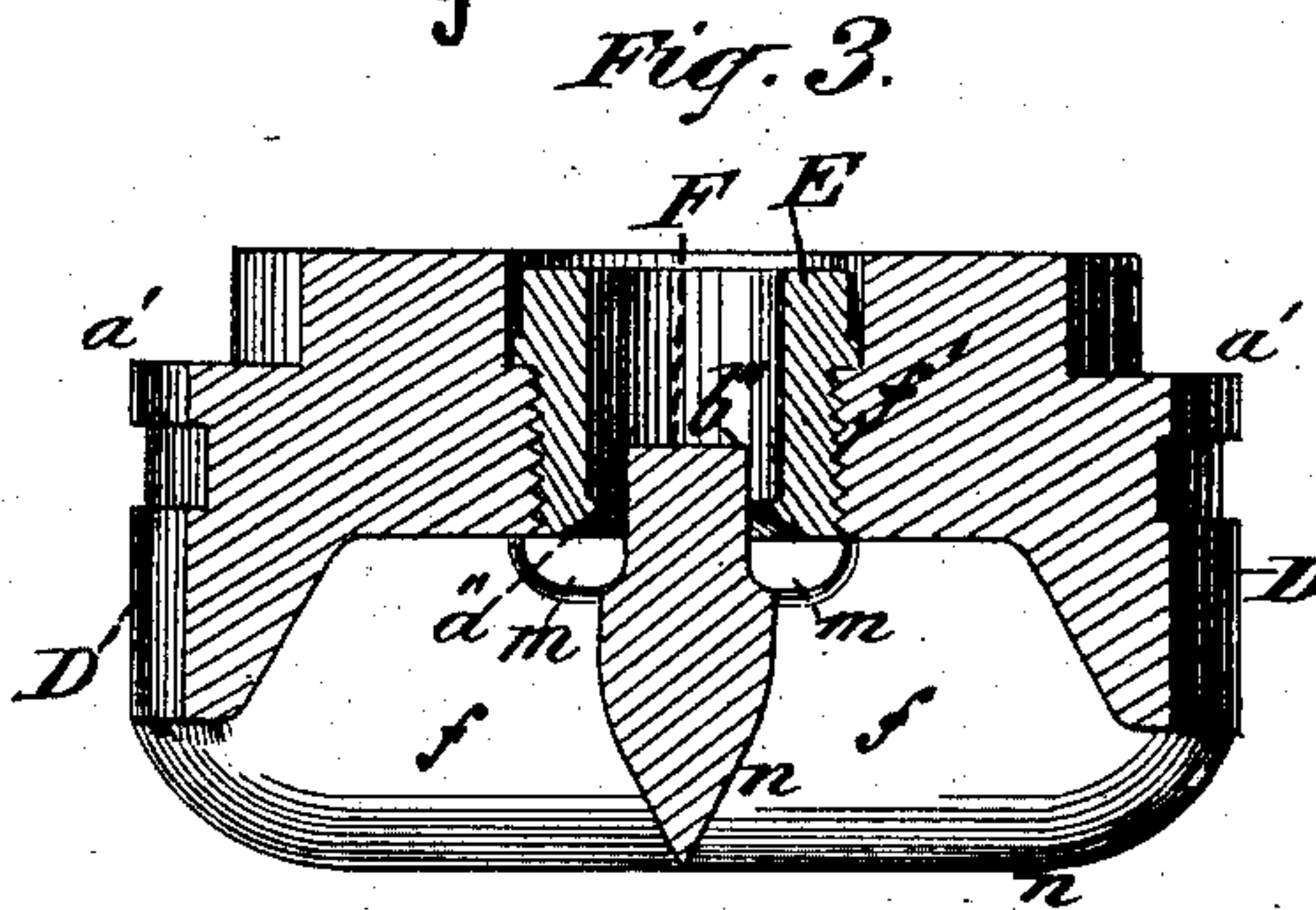
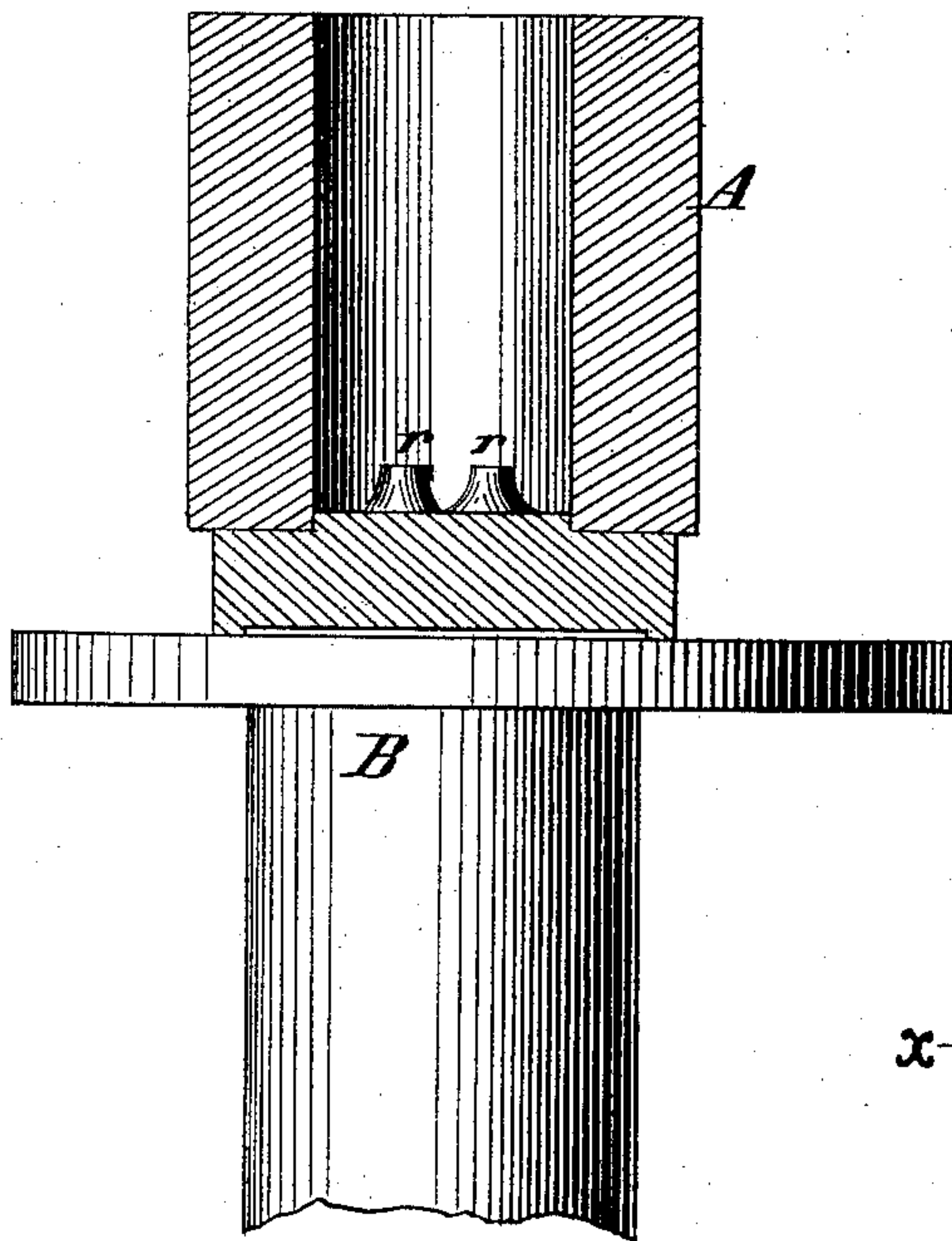
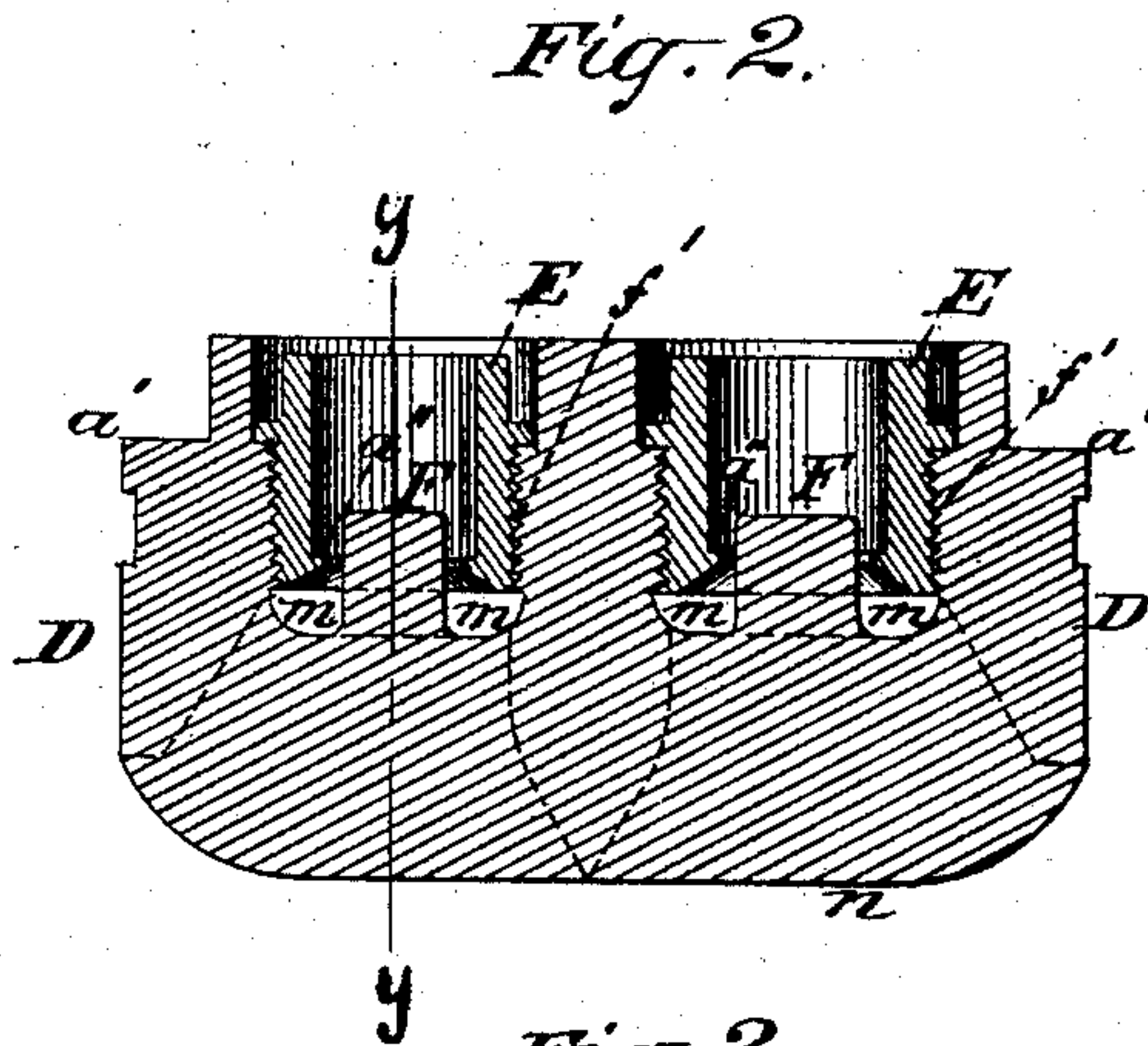
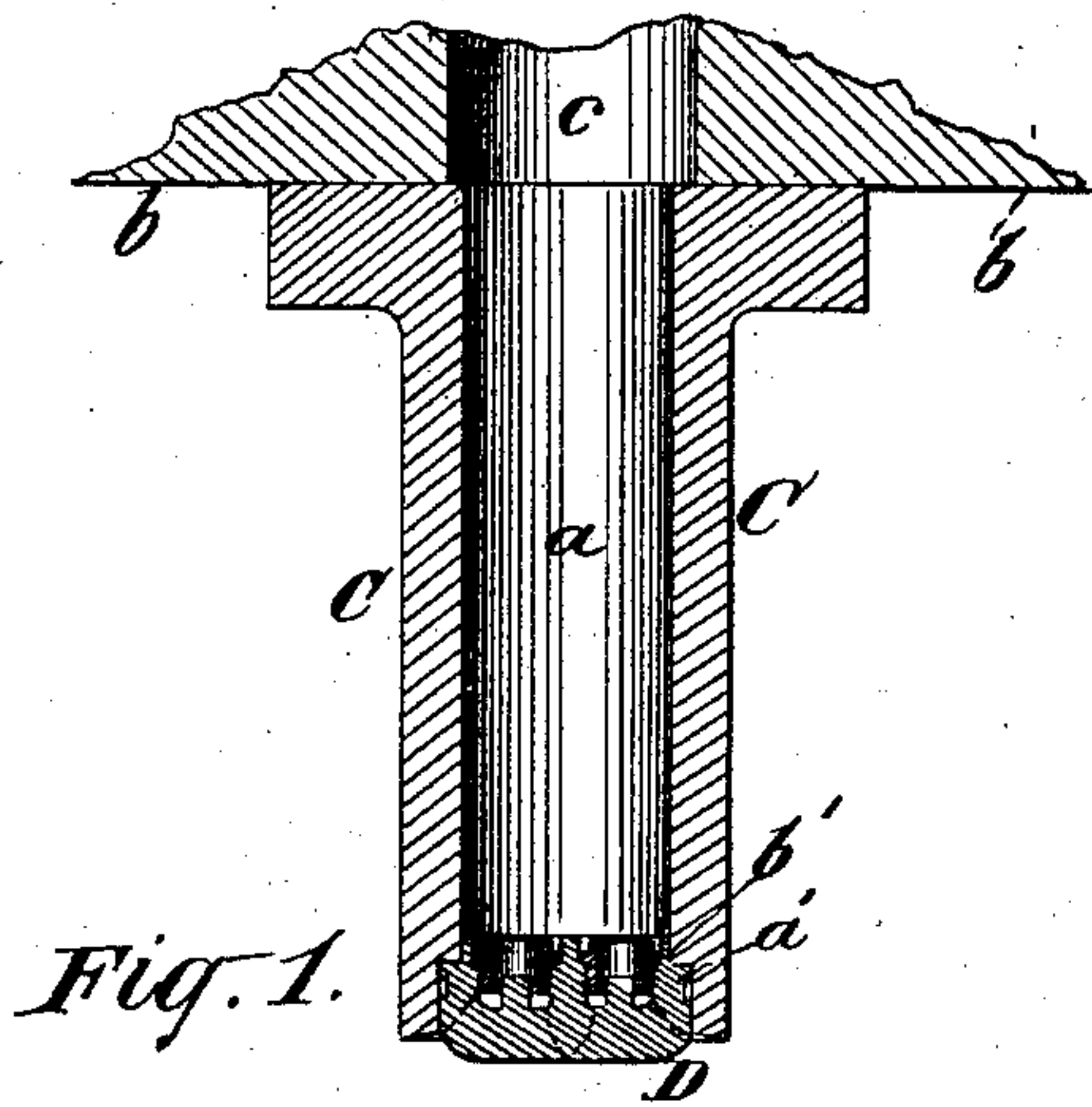
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J. C. APPLEBY.

MEANS FOR MAKING PIPES.

No. 374,167.

Patented Dec. 6, 1887.



WITNESSES

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

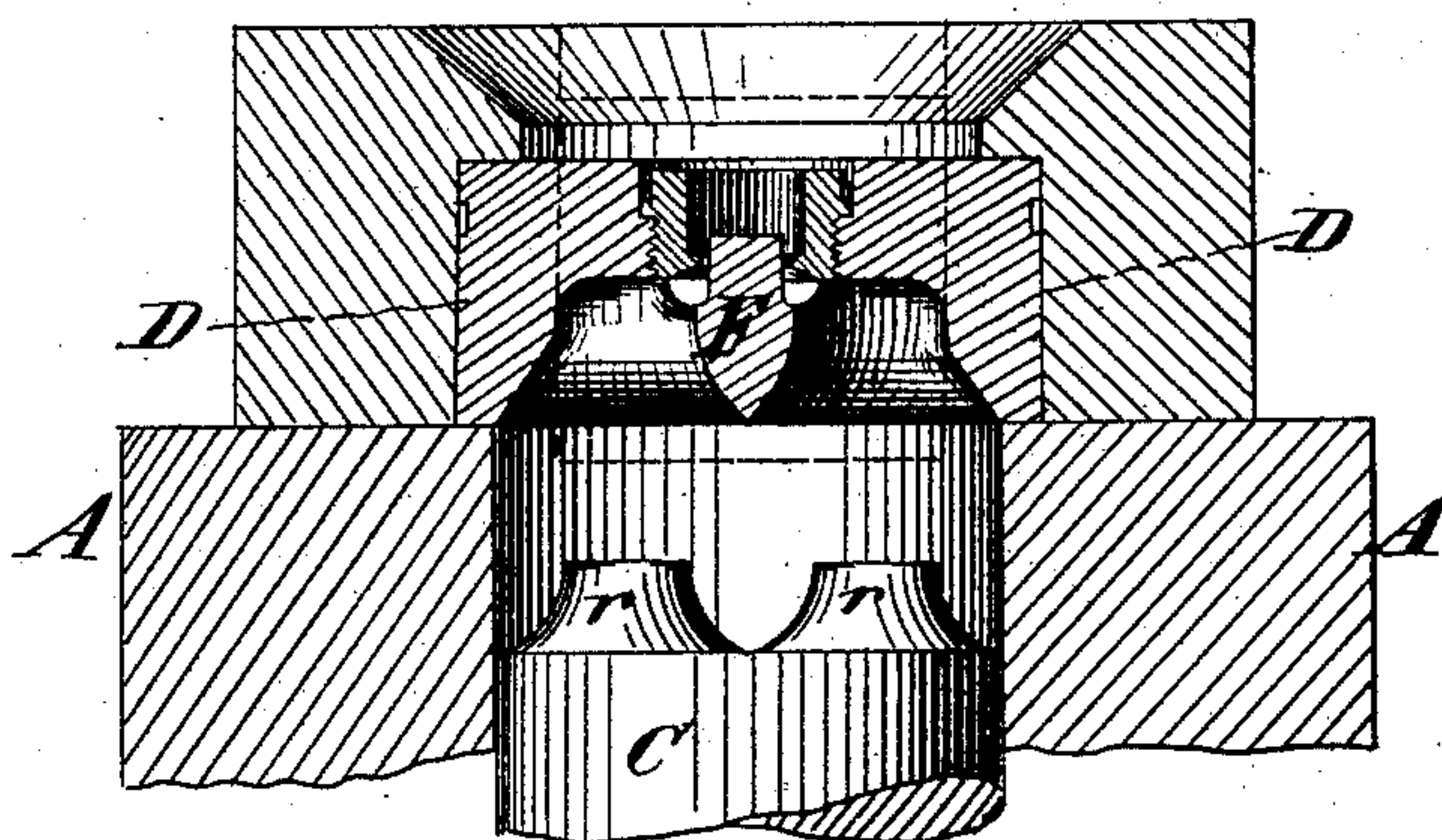
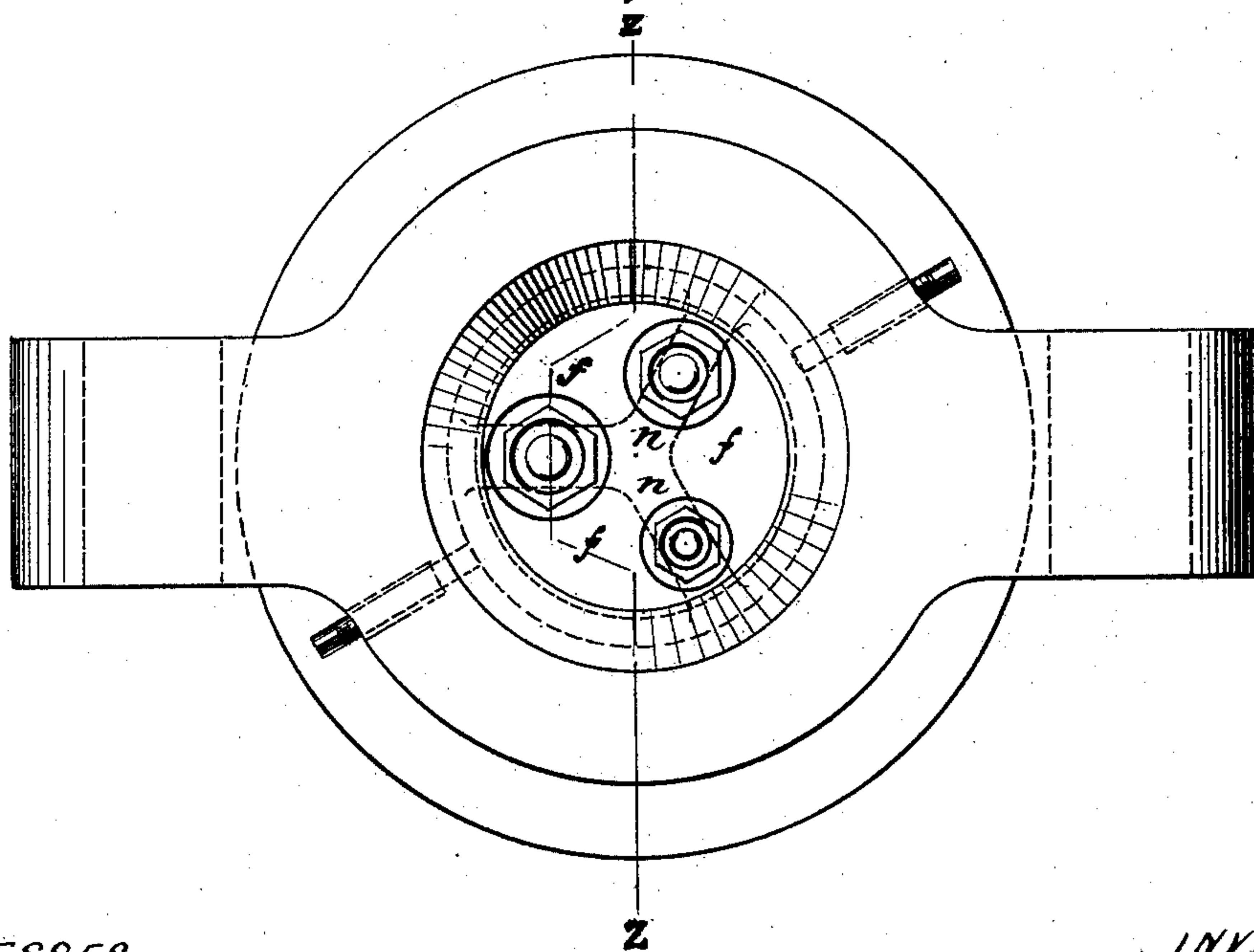


Fig. 6.



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UNITED STATES PATENT OFFICE,

J. CHARLES APPLEBY, OF JERSEY CITY, NEW JERSEY.

MEANS FOR MAKING PIPES.

SPECIFICATION forming part of Letters Patent No. 374,167, dated December 6, 1887.

Application filed May 14, 1887. Serial No. 238,200. (No model.)

To all whom it may concern:

Be it known that I, J. CHARLES APPLEBY, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Means for Making Pipes, Tubes, &c., of Lead, Soft Metal, Alloy, or other Plastic Material; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the simultaneous production, by means of a single apparatus, of a plurality of pipes or tubes of lead, alloy, soft metal, or other plastic material, whereby not only may a larger quantity of pipes or tubes be made in any given time, but whereby, also, the capacity of the machine is greatly increased and the power required is materially diminished.

My invention comprises certain novel combinations of parts, whereby the aforesaid advantageous results are effectually obtained, and whereby, further, pipes or tubes having greater uniformity of the thickness of their walls are obtained, and whereby, further, the machine is rendered simple and strong in construction and easy of operation.

Figure 1 is a vertical longitudinal sectional view of an apparatus embracing my said invention. Fig. 2 is a central vertical transverse sectional view taken in the same plane as Fig. 1, but on a much larger scale, and in the line $x x$ of Fig. 4. Fig. 3 is a sectional view of the parts shown in Figs. 2 and 4, but taken in a plane at right angles to Fig. 2—that is to say, in the line $y y$ of Figs. 2 and 4. Fig. 4 is a plan view of the parts represented in Figs. 2 and 3 and on the same scale therewith. Fig. 5 is a vertical transverse sectional view taken in the line $z z$ of Fig. 6; and Fig. 6 is a plan view on the same scale, illustrating a modified construction of the apparatus.

Referring first to Figs. 1 to 4, inclusive, A is the cylinder of a lead-pipe machine, placed in the usual manner and by means of the usual devices upon the plunger B of the ram of a hydraulic press. C is the fixed ram of the apparatus, which, as the cylinder A is elevated by hydraulic or other power, passes into the said cylinder. The fixed ram C is tubular, as

shown at a , and the support b , to which it is attached in the usual or any suitable manner, has an opening, c . The interior a and the opening c are designed to permit the pipes, tubes, &c., as the same are ejected from the machine, to pass to any suitable reel or other receiving apparatus.

As the cylinder A, plunger B, ram C, and support b operate in relation with each other in a manner well known in the art of making lead pipe, they need no specific description here.

Into the lower and otherwise open end of the ram C is fitted what, for convenience, I term the "die-head" D, this die-head being formed with a circumferential shoulder, a' , which fits against a corresponding shoulder, b' , formed in the adjacent internal walls of the ram C, as illustrated in Fig. 1, the arrangement being such as will enable the die-head D to resist the tendency to be driven upward or out of place by the pressure exerted upon the under side thereof during the operation of the machine, as hereinafter fully set forth. The under side of this die-head is chambered, as shown at f . Above each of the chambers f is a cylindrical internally-threaded opening, f' , into which is screwed a circular die, E. The upper end of this die may be formed externally to constitute a nut by which the die itself may be screwed into place or adjusted therein, as occasion may require.

In each die E, with its axis coincident with the axis of said die, is a core F. The space between the surface a'' of the die E and the external circumference, b'' , of the core F determines the thickness of the walls of the pipes, tubes, &c., to be made, so that by removing a die E and substituting another of a different diameter at the part a'' pipes, tubes, &c., of different thickness of walls may be made upon one and the same machine. Passages m lead from the chambers f to the space between the cores F and the dies E, the metal separated by the downwardly-projecting partitions n , which support the cores F, being joined and welded together by heat and pressure, one or both, as the same is compressed by being forced through the die. The chambers f may correspond in number to the dies E, with which they communicate as aforesaid, and are separated from each other by the

downwardly-projecting partitions *n*, aforesaid, the outer edges of which should be brought substantially to a wedge-shaped or cutting edge to retard as little as possible the passage
5 of the lead, soft metal, or other plastic material to and through the chambers *f*.

In the bottom of the cylinder A, in line with the chambers *f*, are provided raised tables *r*, which should be substantially coincident in shape with the chambers *f*, so that
10 when the cylinder A is moved upward to its limit the tables *r* will pass into the chambers *f* and expel the lead, alloy, soft metal, or other plastic material therefrom through the dies
15 E, so that substantially the whole quantity of the material placed in the cylinder A may be worked up, thereby avoiding any material clogging of the machine by reason of any residue left in the chambers *f* at the conclusion
20 of the operation of working up the charge of material in the cylinder A.

It will be observed that the partitions *n* serve to strengthen the die-head D internally, and at the same time to guide and direct the contents of the cylinder A into the chambers *f*
25 as said contents pass to the dies, E.

When desired, the apparatus hereinbefore described as attached to the fixed ram C may be placed in the end of the cylinder, while the
30 tables *r*, described as placed in the cylinder, may be placed upon the end of the ram. The apparatus shown in Fig. 1 as attached to the ram is shown in Figs. 5 and 6 as attached to the cylinder.

35 The term "annular die," as I have used it in this specification, is designed to cover dies capable of producing pipes or tubes of circular, oval, rectangular, hexagonal, or other cross-section, or when the apparatus is so constructed,
40 as may be done by the exercise of

merely mechanical judgment, as to permit the cores F to be removed in the production of rods with walls of any such or suitable cross-section. Furthermore, the several dies, with
45 their accompanying cores, may be of different sizes for the production of pipes or tubes having walls of different thickness, or for the production of pipes or tubes of different internal diameters, or pipes differing both in their internal and external diameters.
50

What I claim as my invention is—

1. The combination of a ram, C, a die-head, D, a plurality of dies provided to the said die-head, and a cylinder, A, movable with reference to the ram, substantially as and for the
55 purpose herein set forth.

2. The combination of a ram, C, a die-head, D, constructed with a plurality of chambers, *f*, a plurality of dies, and a cylinder, A, movable with reference to the ram, substantially as
60 and for the purpose herein set forth.

3. The combination of a ram, C, a die-head, D, constructed with a plurality of chambers, *f*, a plurality of dies, a cylinder, A, movable with reference to the ram, and a plurality of
65 tables, *r*, coincident with the chambers *f*, substantially as and for the purpose herein set forth.

4. The combination of a die-head, D, constructed with a plurality of dies, and a plurality of chambers, *f*, communicating with the said dies, and having partitions *n* interposed between the said chambers and brought to a substantially wedge-shaped or cutting edge, substantially as and for the purpose herein set
70 forth.
75

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Witnesses:

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