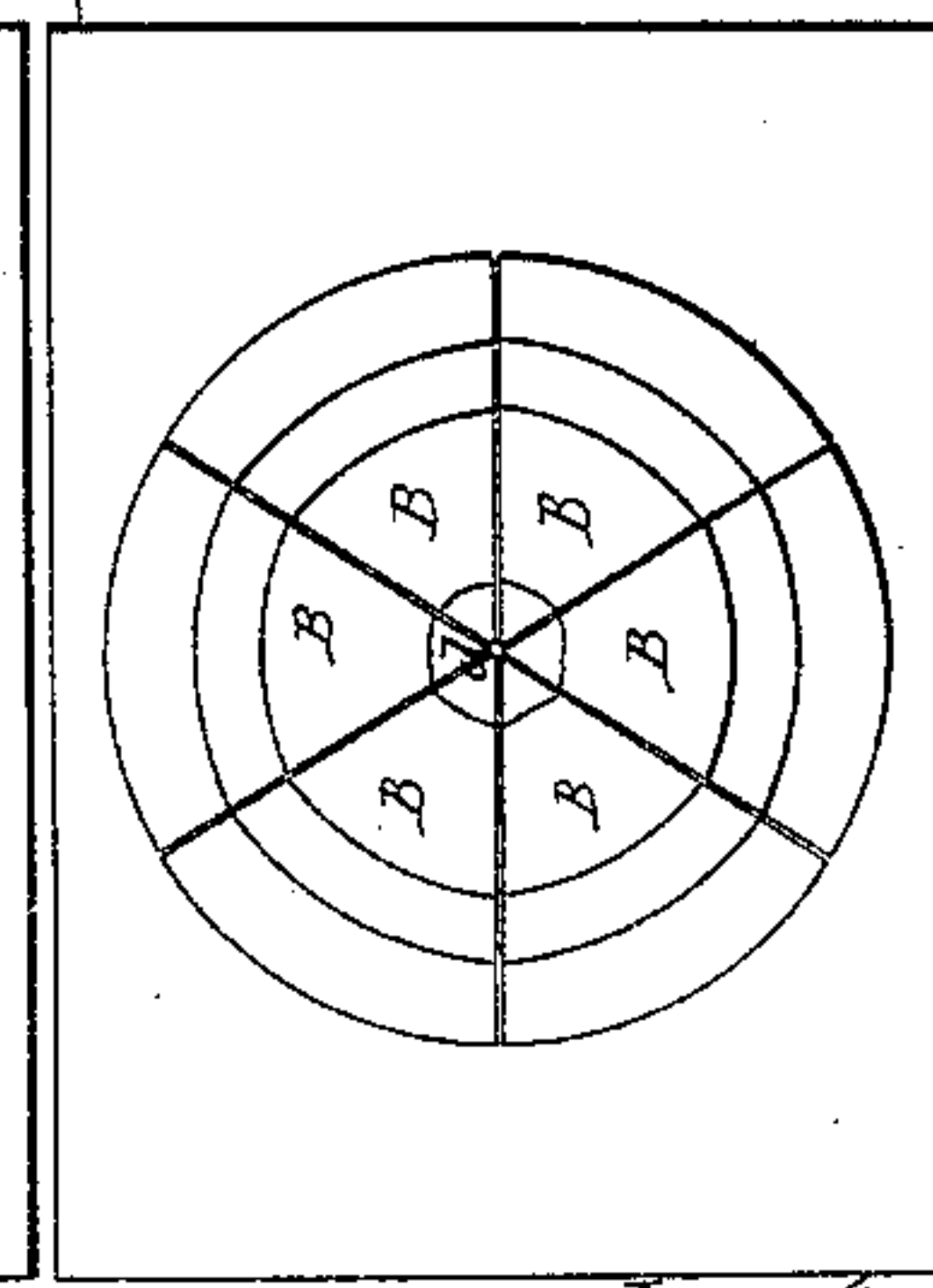
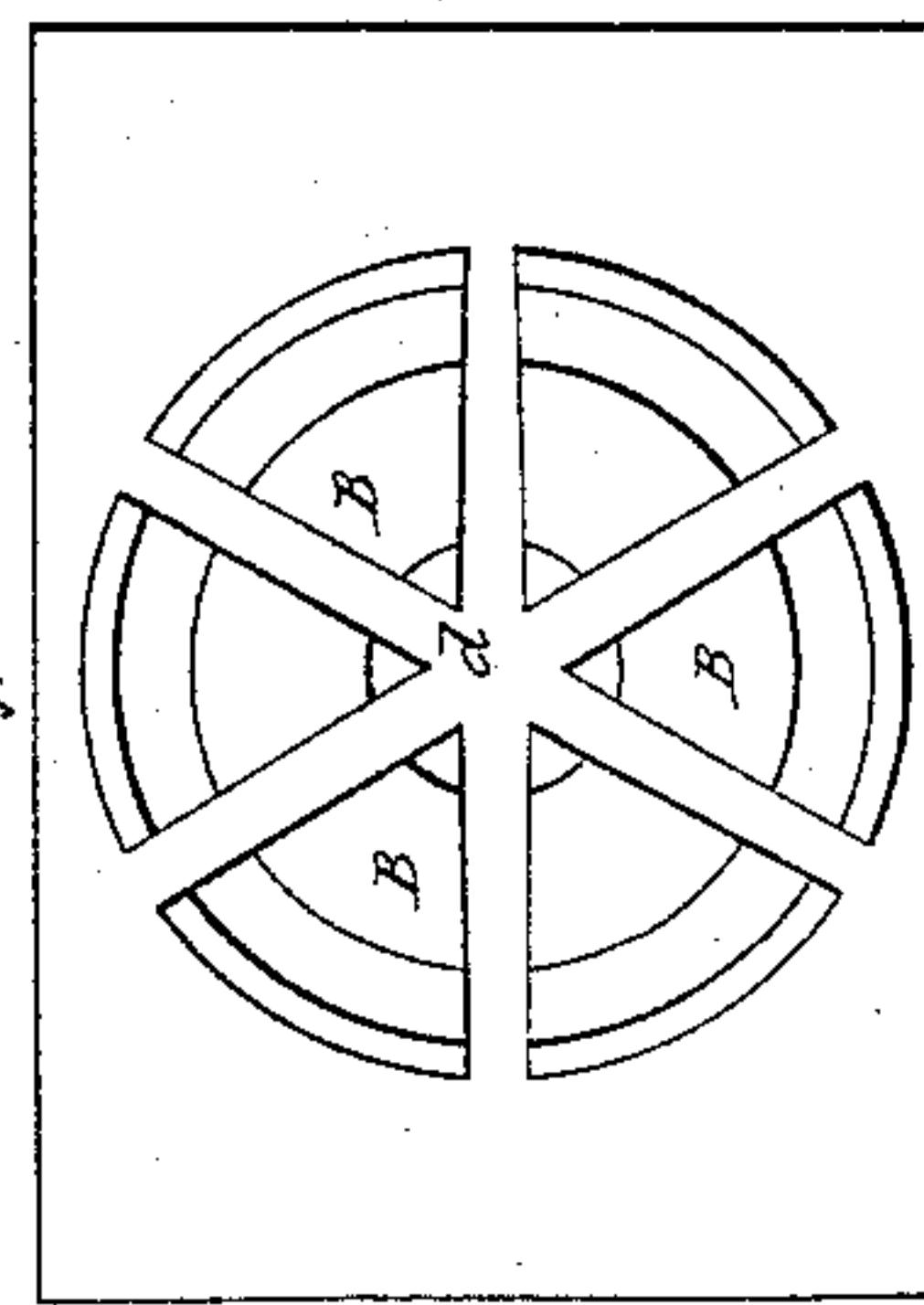
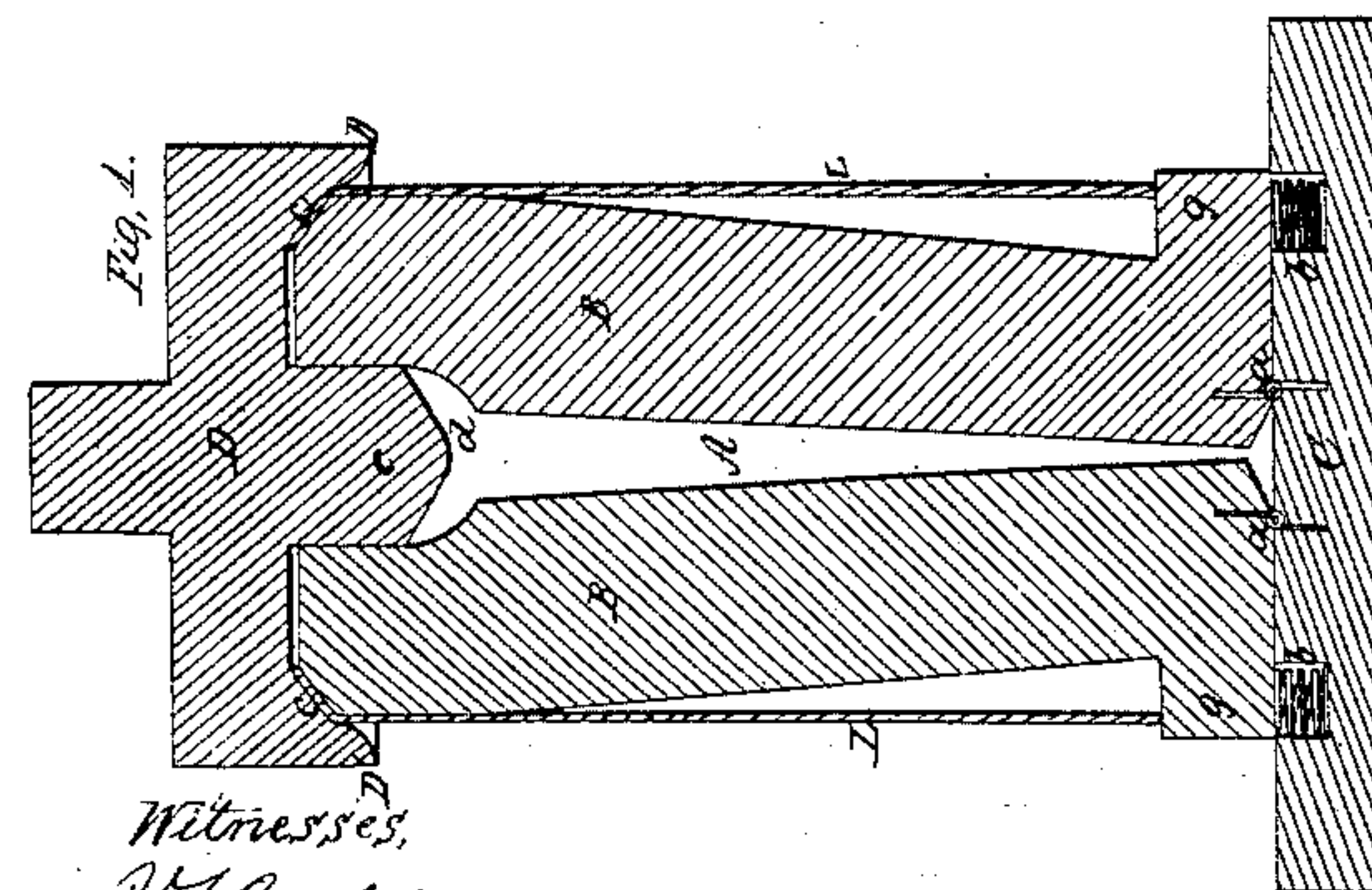
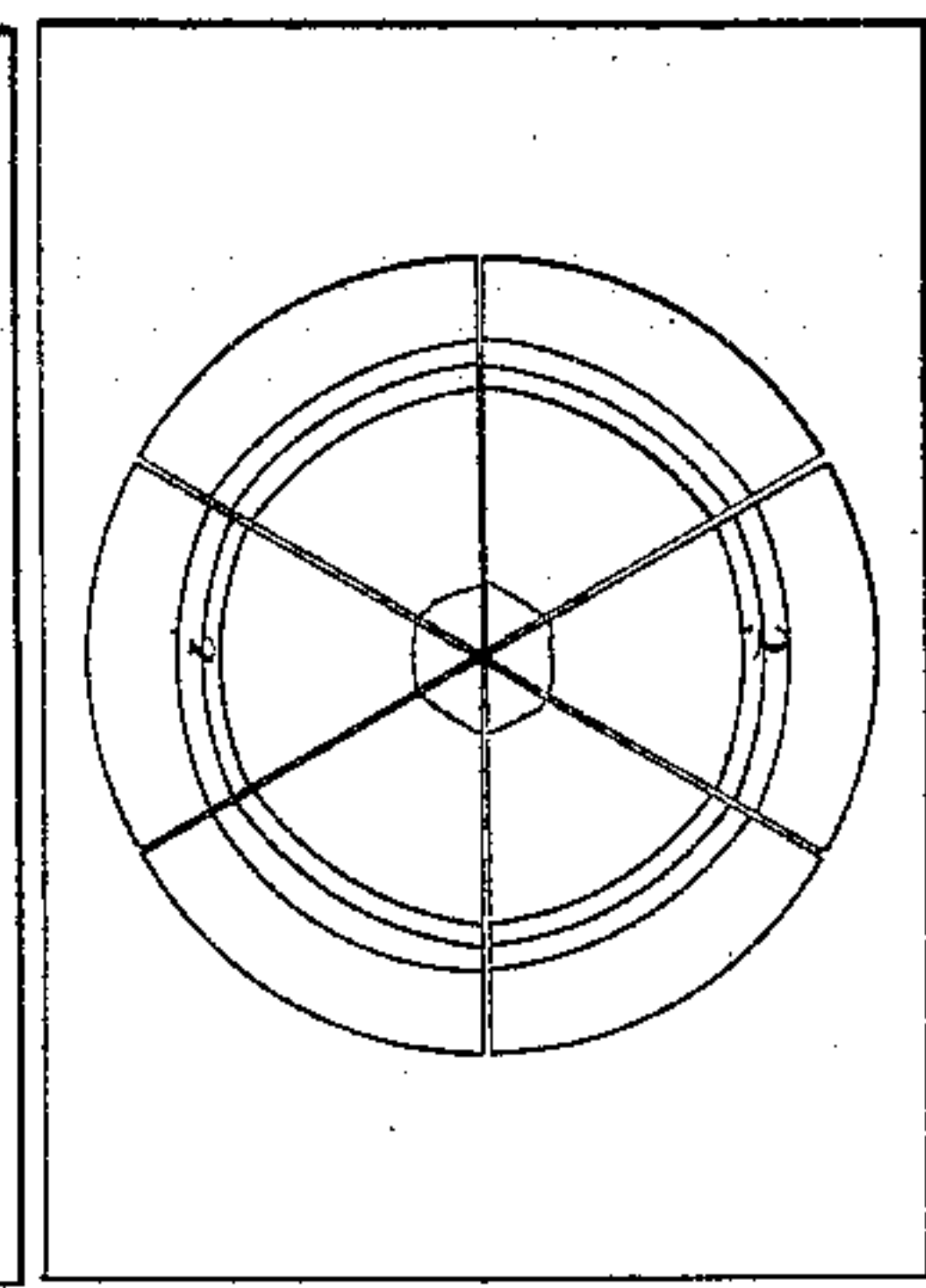
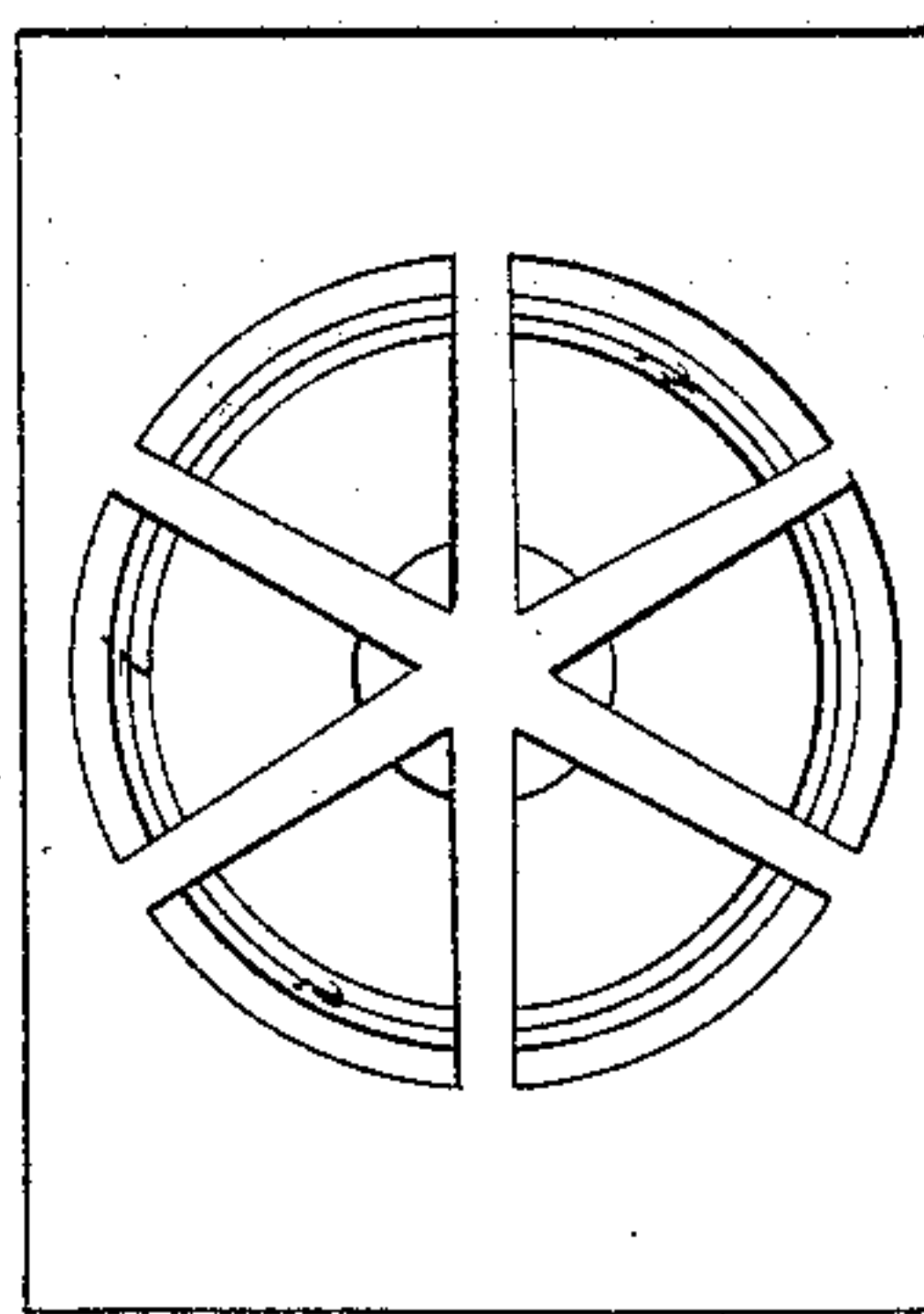
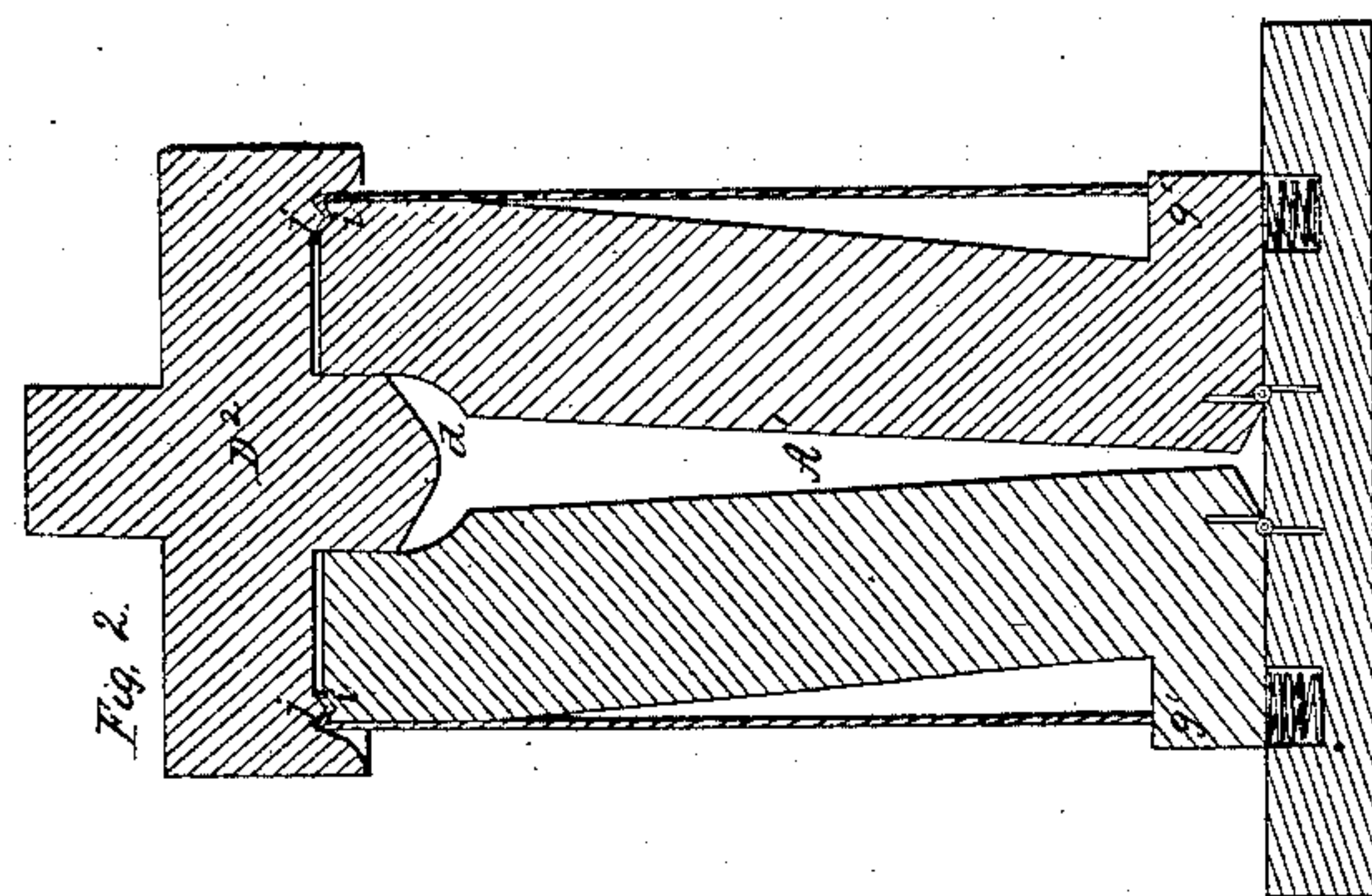
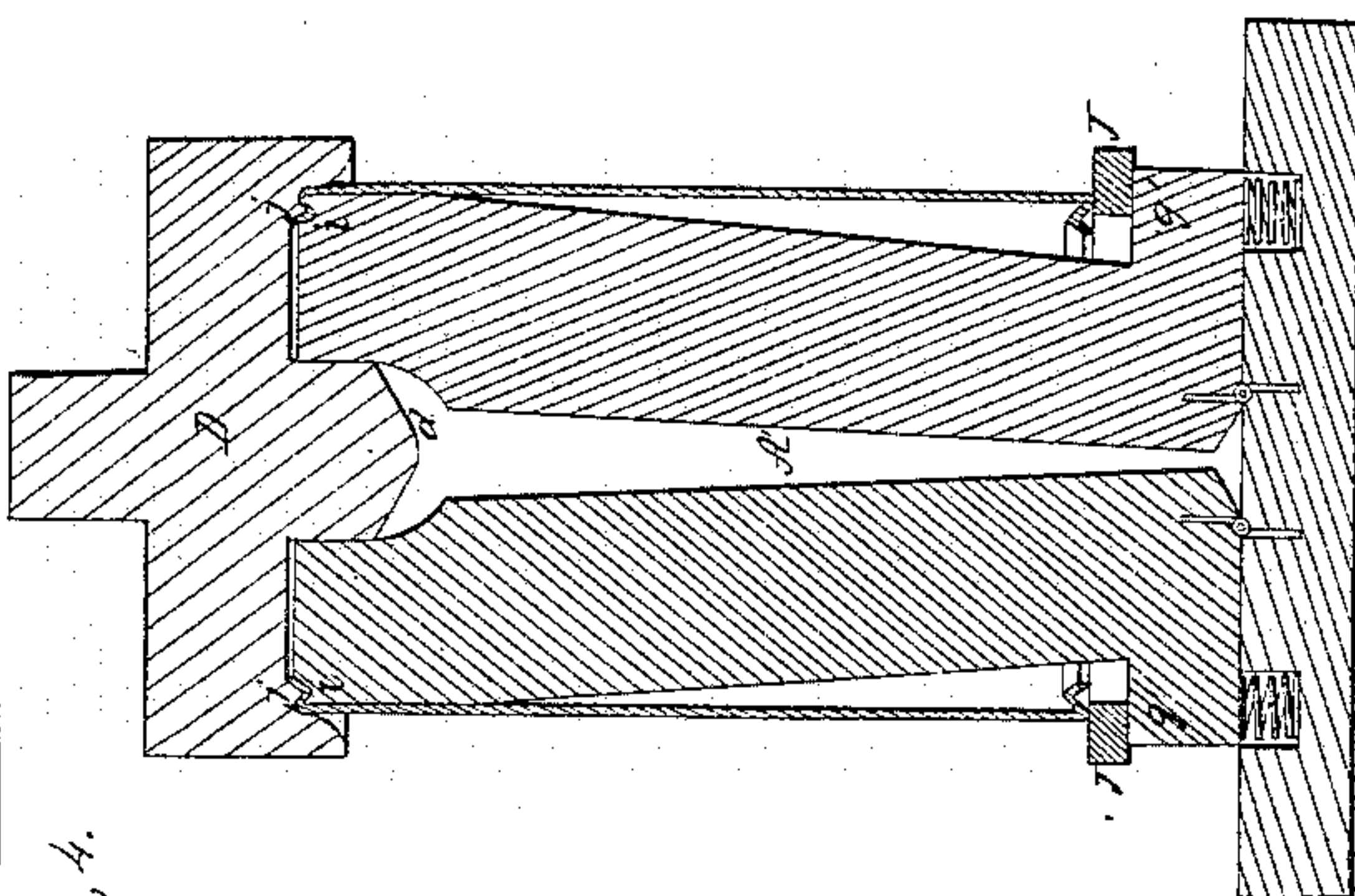
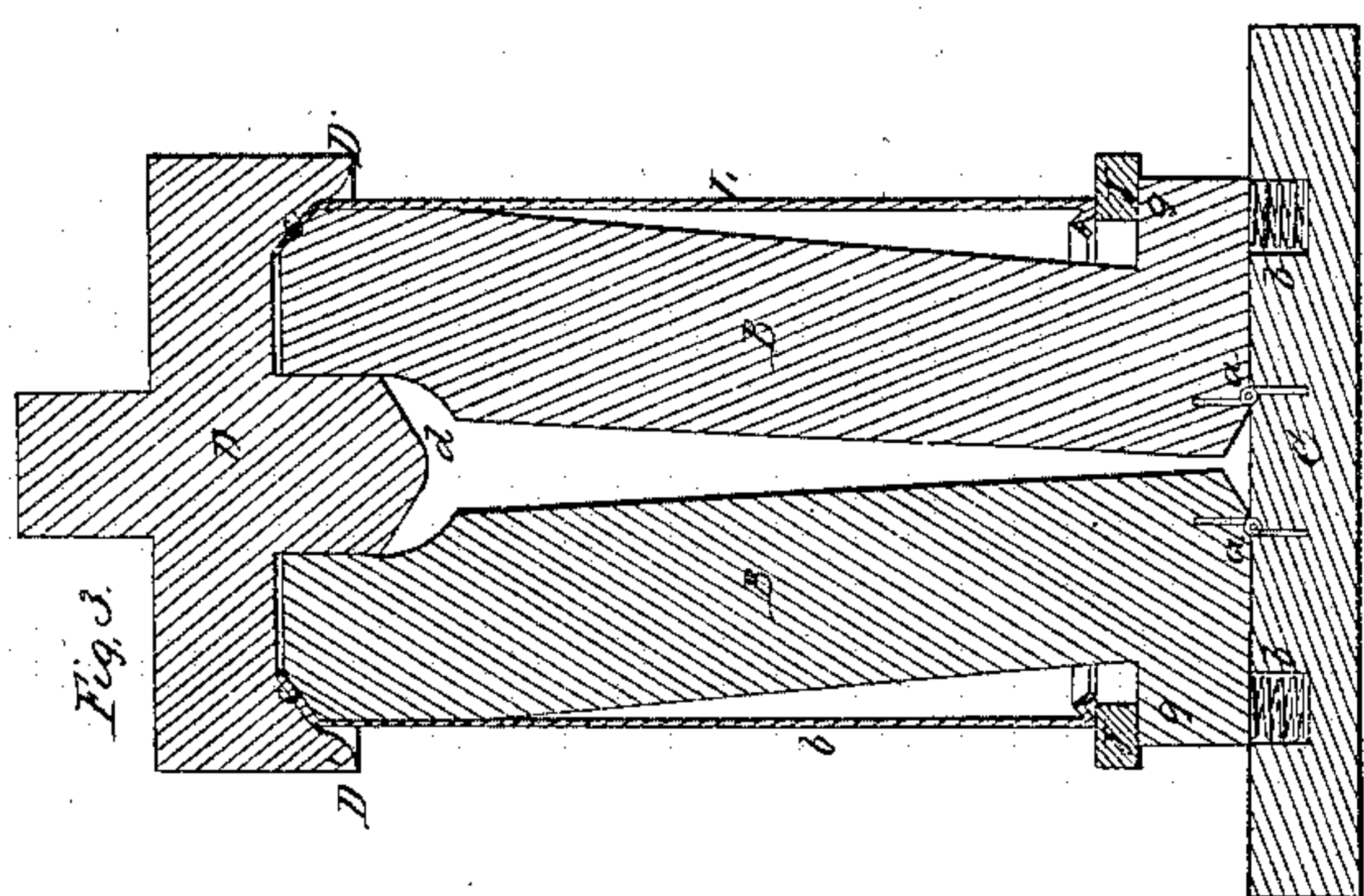


*J. L. Gray.*  
*Die for Making Caps.*

*No 63,503.*

*Patented Apr. 2. 1867.*



*Witnesses,*  
*R. T. Campbell*  
*John H. Gray*

*Inventor*  
*Jas. L. Gray*  
*by*  
*Wm. L. Smith*



# UNITED STATES PATENT OFFICE.

JAMES L. GRAY, OF BALTIMORE, MARYLAND, ASSIGNOR TO F. M. HAY  
AND M. L. AND M. A. GRAY, OF SAME PLACE.

## IMPROVED DIE FOR MAKING CANS.

Specification forming part of Letters Patent No. 63,503, dated April 2, 1867.

*To all whom it may concern:*

Be it known that I, JAMES L. GRAY, of the city and county of Baltimore, State of Maryland, have invented certain new and useful Improvements in Dies for Making Preserve-Cans; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figures 1 and 2 are sectional views of two dies which are used for producing a grooved flange upon one end of each can. Figs. 3 and 4 are similar views of the same dies arranged for producing the grooved flanges upon cans having one end flanged. Fig. 5 is a top view of the die of Fig. 1 contracted. Fig. 6 is a top view of this die expanded. Figs. 7 and 8 are top views of the die of Fig. 2 contracted and expanded.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain new and improved dies which are designed for producing grooved flanges upon both ends of preserve-cans, which flanges are adapted for receiving the cap and bottom plates of the cans, and also a sufficient quantity of solder to cover the joints of said plates, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

The dies and stamps represented in Figs. 1, 4, 5, and 6, are adapted for turning over the ends of the cylindrical bodies of the cans, and the dies represented in Figs. 2, 3, 7, and 8 are adapted for finishing the flanges thus formed by producing grooves or channels in them. The first operation is conducted with the die and stamp represented in Figs. 1, 5, and 6.

The die A is of a cylindro-conical form, and consists of a number of upright segments or sections, B B, which are attached by pivots or eyes *a a* to a base-piece, C, so that the segments can be expanded and contracted at their upper ends, for a purpose which will be hereinafter explained.

Springs *b* may be inserted into the base C, for the purpose of pressing the upper ends of the segments together, as shown in Fig. 5,

when the stamp D is removed from the upper end of the die.

The upper corner of the die A is beveled at the angle required for the flanges *c*, on the cans L, and the top face of this die is flat, with a central depression, *d*, in it for receiving the conical expanding-plug *e*, which is formed on the stamp-head D, as shown in the drawings. The lower end of the die A has a flange or base-piece, *g*, formed on it, which should be of greater diameter than the can-body, for sustaining this can-body during the formation of the flange upon its upper end.

The stamp D is a counterpart of the upper end of the die A, and it is constructed with a rim, D', which serves as a guide and also incloses the end of the can-body during the turning over of the flange. This stamp-head may be applied to a reciprocating rod, which is acted upon by means of levers, screws, or other mechanical power which may be found convenient.

The upper portion of the die A should be constructed with reference to a given diameter of cylinder, so that when the plug *e*, which projects from the center of the bottom face of the stamp-head, enters the central depression in the top of the die, as shown in Fig. 1, the sections A will be fully expanded and will all be pressed firmly against the inner surface of the can-body or cylinder L, thus holding the latter firmly during the formation of the flange *c*.

The can-body with its flange formed on it is removed from the die A and placed over the die A', for producing a groove in the flange *c*, and thus finishing one end. This grooving-die is of the form and construction of the flanging-die, with the exception that this grooving or finishing die has a channel, *i*, formed in its upper face and near its outer edge, which receives the metal impressed by the angular rib *j*, which is formed on the lower face of the stamp-head D<sup>2</sup>, as shown in Fig. 2.

The same dies and stamps are used for producing the grooved flanges upon the opposite ends of the cans; and in order to compensate for the reduced length of the cans after one end has been finished, I employ movable rings J, of the proper thickness, which are slipped over the ends of the dies and sustained upon the cylindrical bases *g g'* thereof, as shown in Figs. 3 and 4. By contracting the dies A A'

near their lower ends, these dies will receive on them a can, after one end has been flanged, to allow of the flanging or finishing of the other end, as shown in Figs. 3 and 4; and by constructing the dies of expanding segments as described they will admit of the application and removal of the flanged cans.

If desirable a flange may be formed and completed on one end of a can by means of solid dies of the proper form; but it will be necessary to employ expansible dies to form the flange on the opposite end of such can. I prefer to employ two expansible dies, as described, so that the flanges *c* can be formed on both ends of the can upon one die, Fig. 1, and these flanges grooved upon the other die, Fig. 2, the

only change required being the use of the base-rings J upon the dies after one end of a can has been finished.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. Expanding dies A A' and stamp-heads D D<sup>2</sup>, constructed and operating substantially as described.

2. The rings J, in connection with the expanding dies A A', substantially in the manner and for the purpose described.

JAMES L. GRAY.

Witnesses:

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