

No. 720,834.

PATENTED FEB. 17, 1903.

A. MICHAEL.
ROTARY ENGINE.

APPLICATION FILED AUG. 21, 1901.

NO MODEL.

Fig. 2. Section N-N (Fig. 1.)

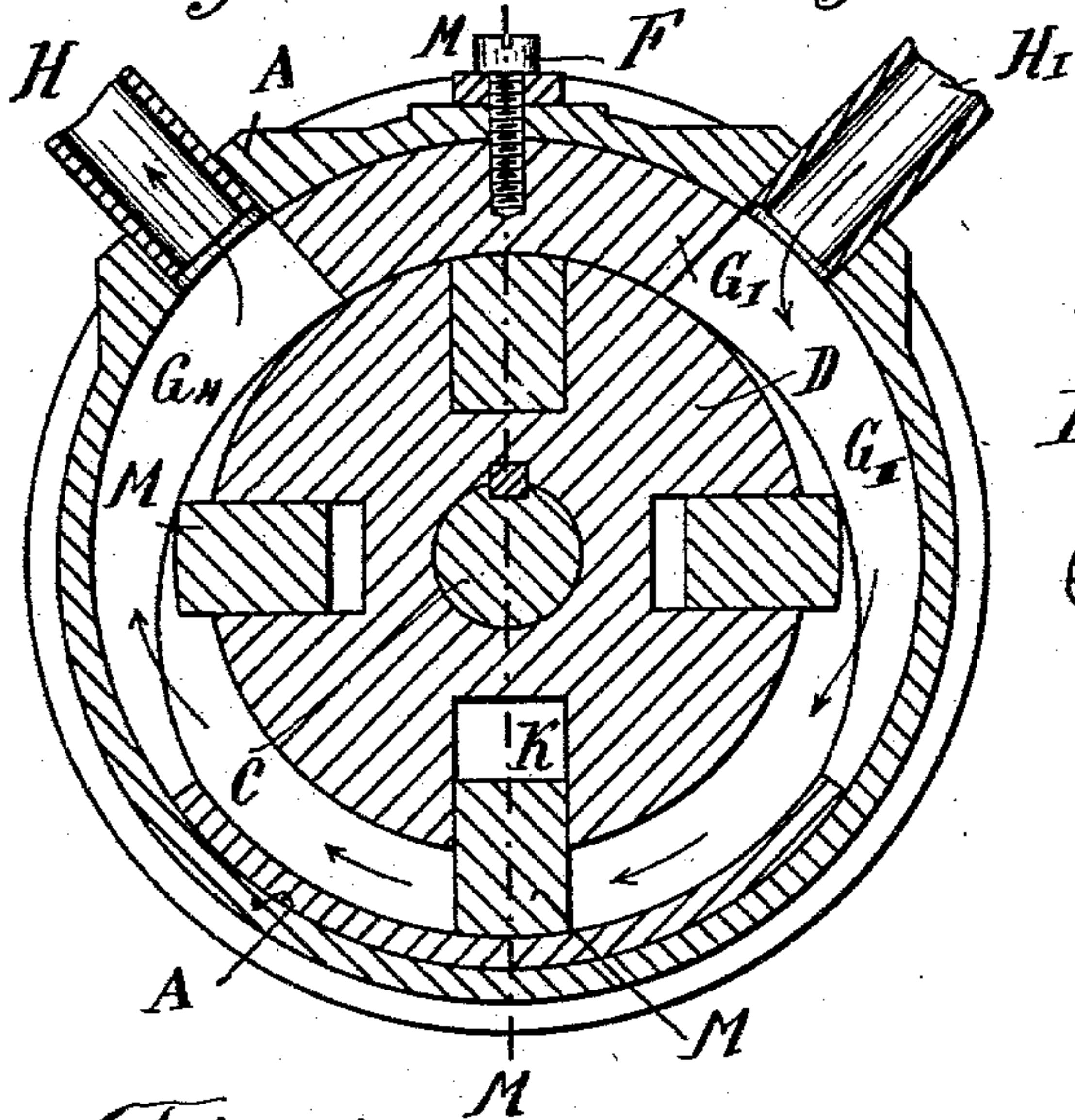


Fig. 3. Section M-M (Fig. 2.)

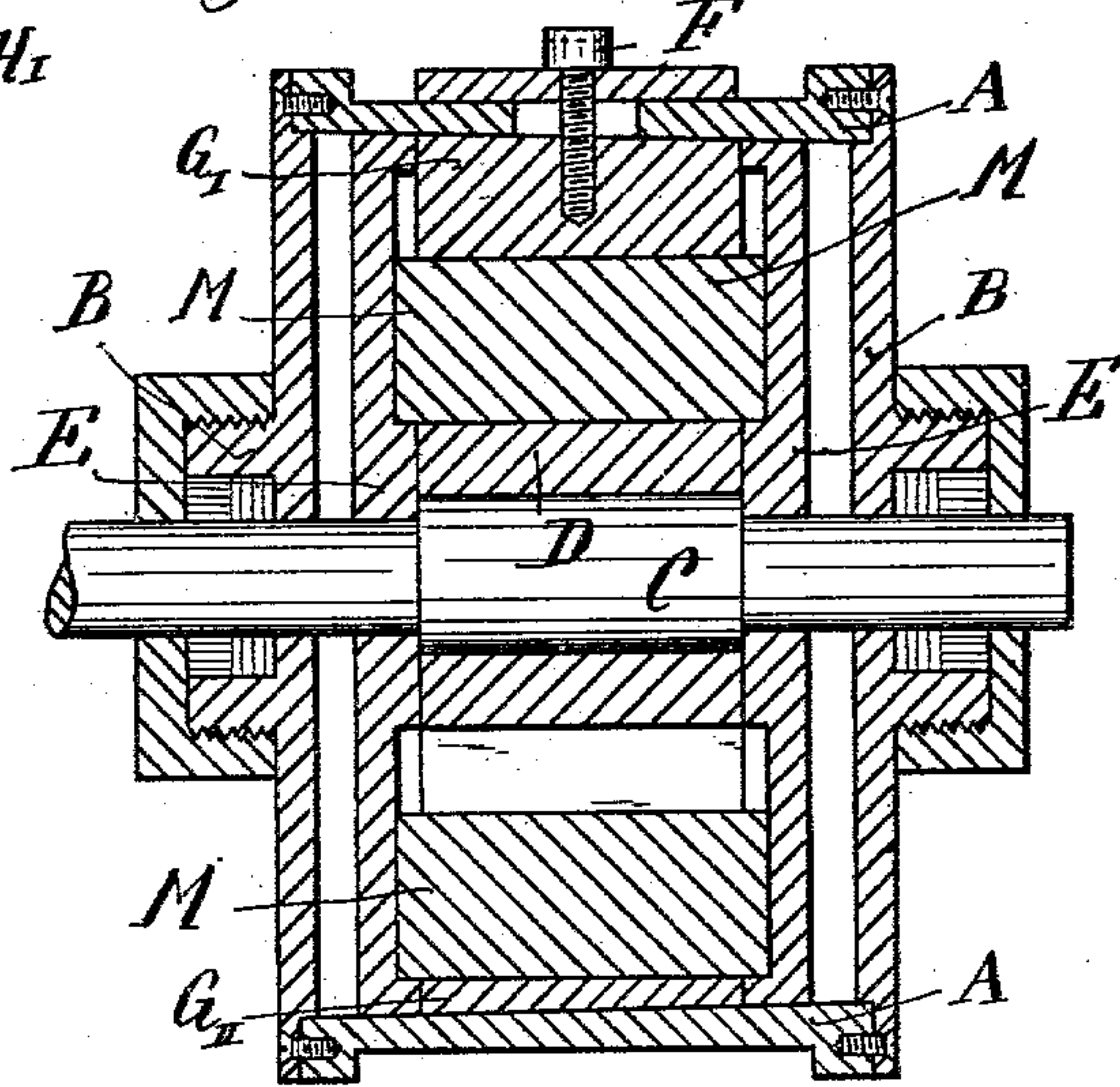


Fig. 1.

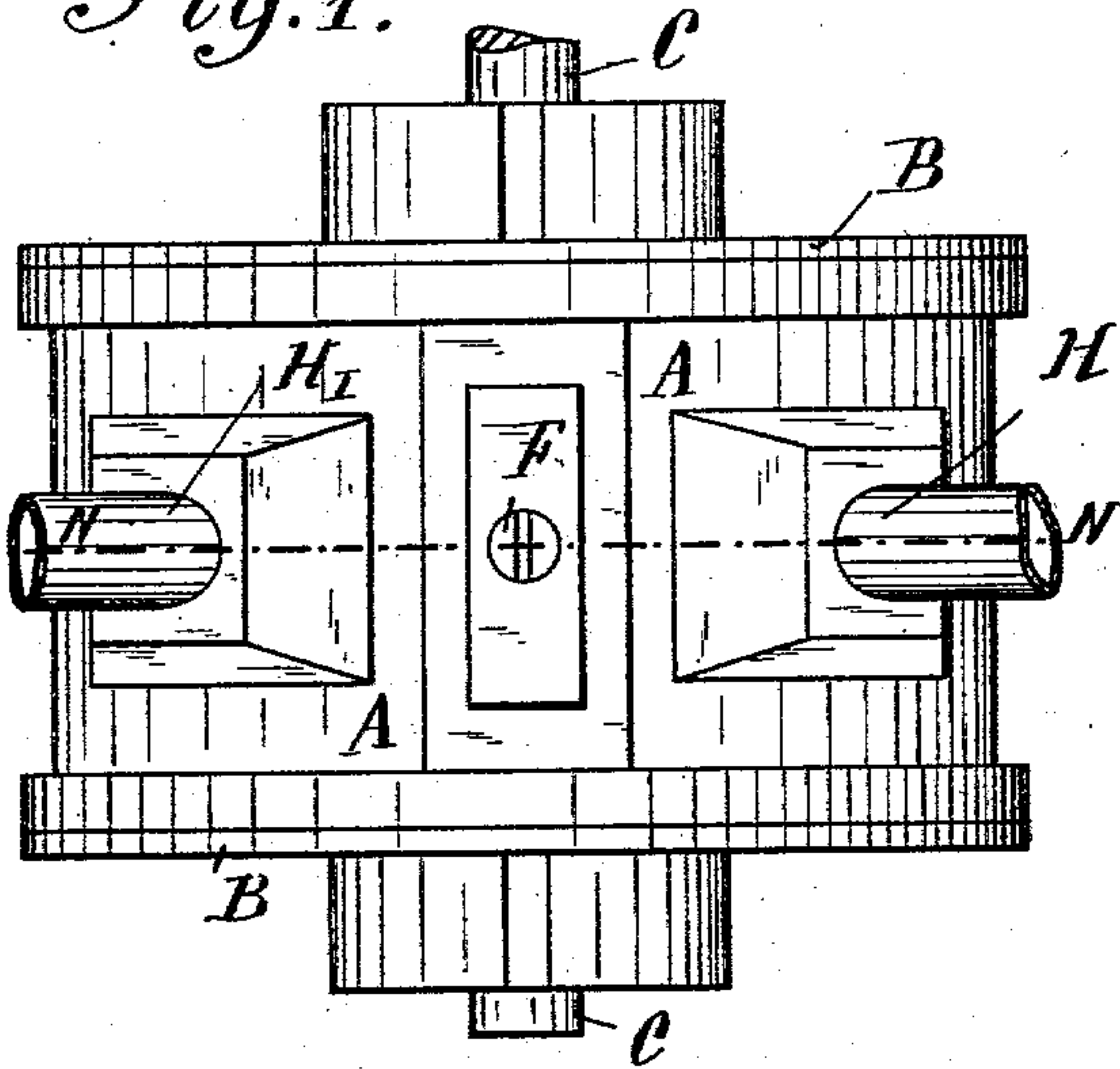


Fig. 5.

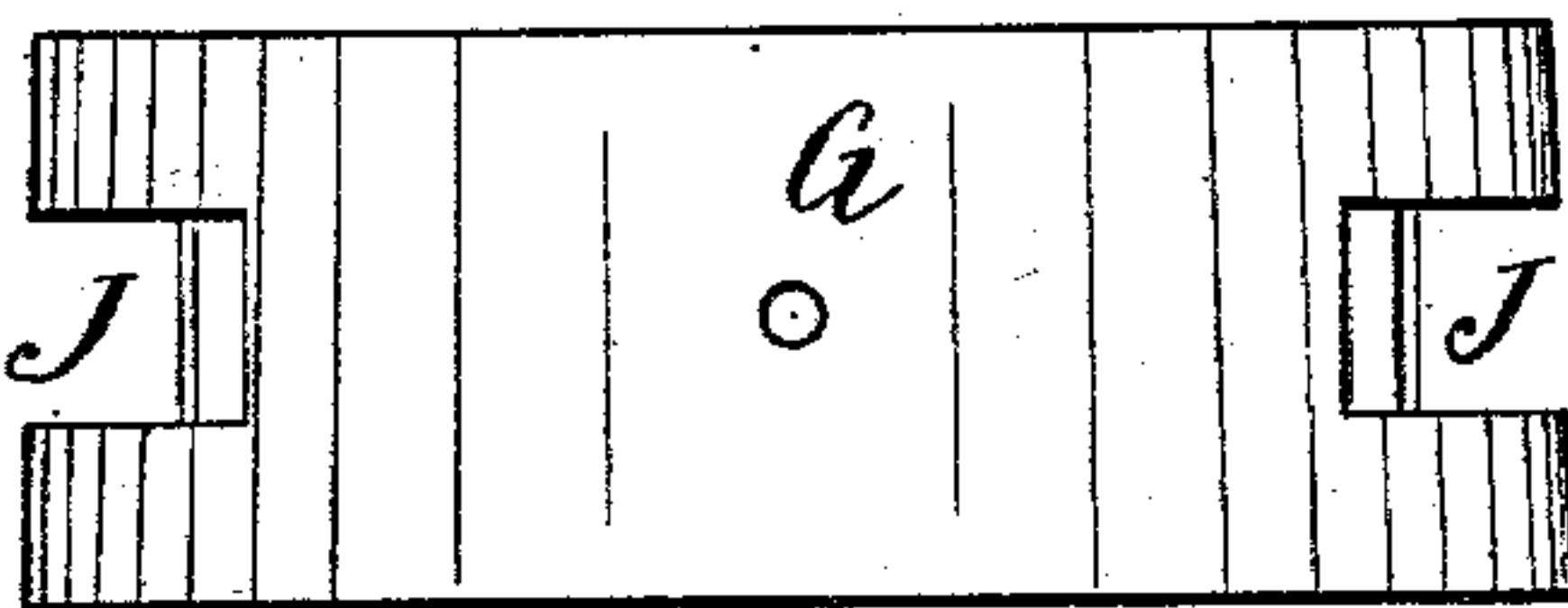


Fig. 4.

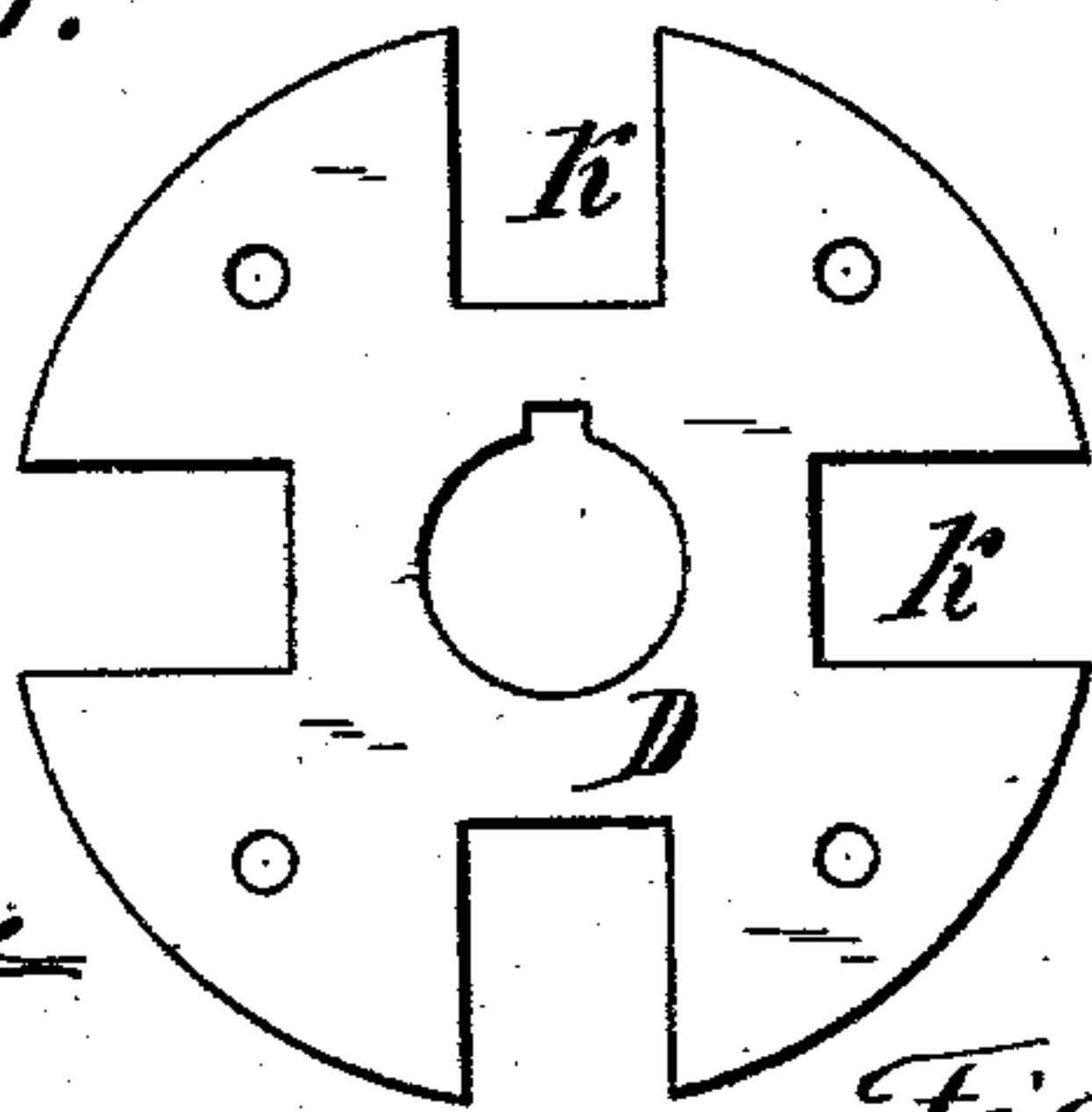
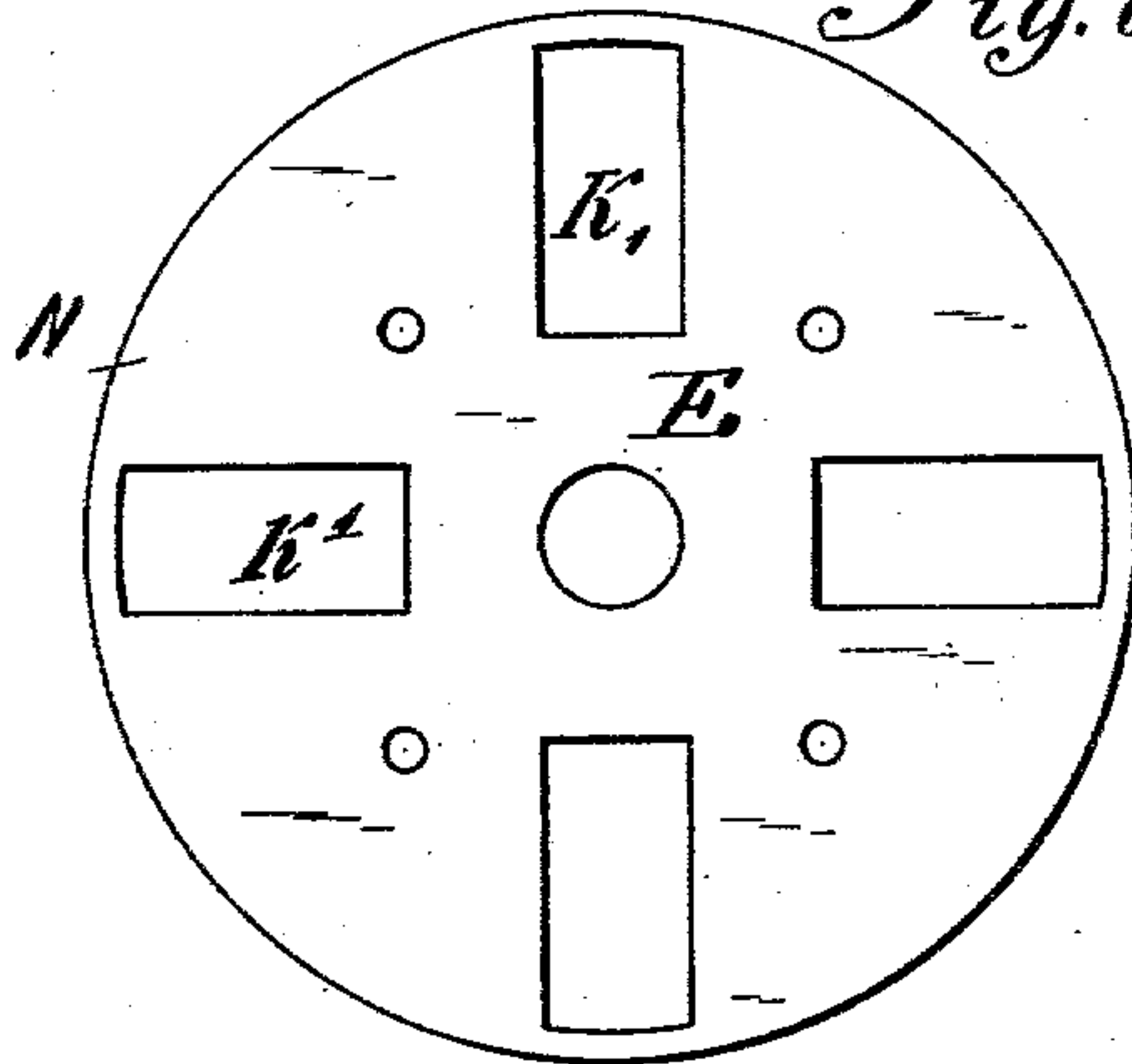


Fig. 6.



Witnesses:-

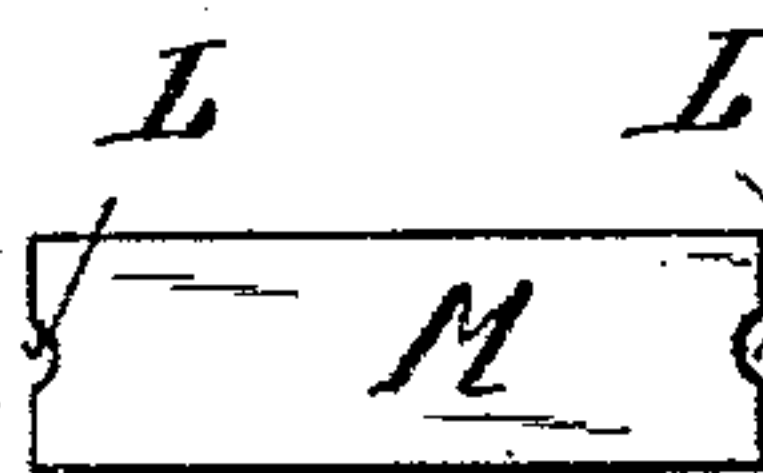
Asa W. White
B. Munster

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Adolph Michael

by *Eustace W. Hopewell*
Atty

Fig. 7.



UNITED STATES PATENT OFFICE.

ADOLPH MICHAEL, OF EILENBURG, GERMANY.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 720,834, dated February 17, 1903.

Application filed August 21, 1901. Serial No. 72,836. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH MICHAEL, a subject of the King of Prussia, Emperor of Germany, residing at Eilenburg, Kingdom of Prussia, Germany, have made a new and useful invention in Improvements of Rotary Engines, of which the following is a full and exact specification.

The present invention relates to rotary engines; and it consists of the details of construction hereinafter set forth, and particularly pointed out in the claim.

In order to render the present specification easily intelligible, reference is had to the accompanying drawings, in which similar letters of reference denote similar parts throughout the several views.

Figure 1 is an end elevation of the engine; Fig. 2, a section on line N N of Fig. 1; Fig. 3, a section on line M M of Fig. 1; Fig. 4, a detail face view of the piston; Fig. 5, an end view of a ring placed within the cylinder; Fig. 6, a face view of two disks employed with the piston, and Fig. 7 a detail view of one of the piston-heads.

The housing A is bored out conically and provided with the covers B, having stuffing-boxes and glands for the shaft C, which passes through them and is provided with an enlarged central part. The piston D is centrally mounted on the said shaft C and provided with four or more radially-arranged sliding piston-heads M, adapted to be projected in and out of the guideways K of the said piston. The said piston is further provided with two face-disks E, each having an inwardly-turned flange, and each disk having guide-slots K' for the piston-heads M, the said slots not extending to the edge of the disks, but forming limitations for the outward movement of the piston-heads. The object of this arrangement is to prevent the piston-heads from rubbing the interior surface of the ring G, against which they are adapted to act. Inserted between the housing and the adjacent faces of the piston-heads is an eccentric ring G, Fig. 5. This ring is not a true eccentric, but is provided with two concentric parts G' and G² and two intermediate eccentric parts G³ and G⁴. The concentric part G'

fits the circumference of the piston D, while the concentric part G² forms the guide-surface for the faces of the piston-heads in their extended positions. The eccentric parts G³ and G⁴ are provided with slots J, and the whole ring is supported rigidly in the housing by means of a screw F, the said slots being in communication, respectively, with the steam inlet H' and outlet H. The faces of the piston-heads M are provided with grooves L, Fig. 7, by means of which the steam or other fluid has free access to the spaces K behind the said piston-heads, so that they are entirely free to be projected out of their guideways as far as the flanges of the disks E allow and inwardly again by the eccentric parts of the ring G.

The engine works in the following manner: Steam enters at H' and passes through the slot J of ring G, acting on the piston-head in front of it and forcing the same along the concentric part G² of the ring G. As soon as one piston-head has left the ring part G² the next will have reached it, thus forming the cut-off, and the steam between the two piston-heads will pass round and out at the exhaust-port H. The closure of the piston and the piston-heads against the upper concentric part G' of the ring G prevents the steam from passing to both sides of a head, and the engine may be reversed by simply using the exhaust-port H as steam-inlet port and the inlet H' as exhaust, as will be readily understood. The conical boring of the housing A enables the piston-disks E to be easily and conveniently tightened up and adjusted, and the flanges of the said disks E allow the edges of the piston-heads to just contact with the concentric parts of the ring G, but not to rub violently against the same and form a brake for the piston.

I claim as my invention—

In a rotary engine the combination of a housing having a conical boring a rotary piston concentrically mounted therein and having radial guideways therein, radially-movable piston-heads in said guideways, and disks at each side of the said piston, having limiting-slots therein for the said piston-heads, and having inwardly-turned flanges lying within the con-

ical boring of the housing, a ring inserted between the interior of the housing and the piston and between the said disks, said ring having two opposite concentric surfaces, one
5 to close onto the piston and the other to receive the piston-heads, and two eccentric surfaces to connect up the said concentric surfaces, the said eccentric parts having at op-

posite sides of the piston the inlet and outlet ports substantially as described. 10

In witness whereof I have hereunto set my hand in presence of two witnesses.

ADOLPH MICHAEL.

Witnesses:

MORITZ SPREER,
ADOLF MICHAEL.