

No. 618,781.

Patented Jan. 31, 1899.

J. J. CALLIHAN.
ROTARY ENGINE.

(Application filed Mar. 30, 1898.)

(No Model.)

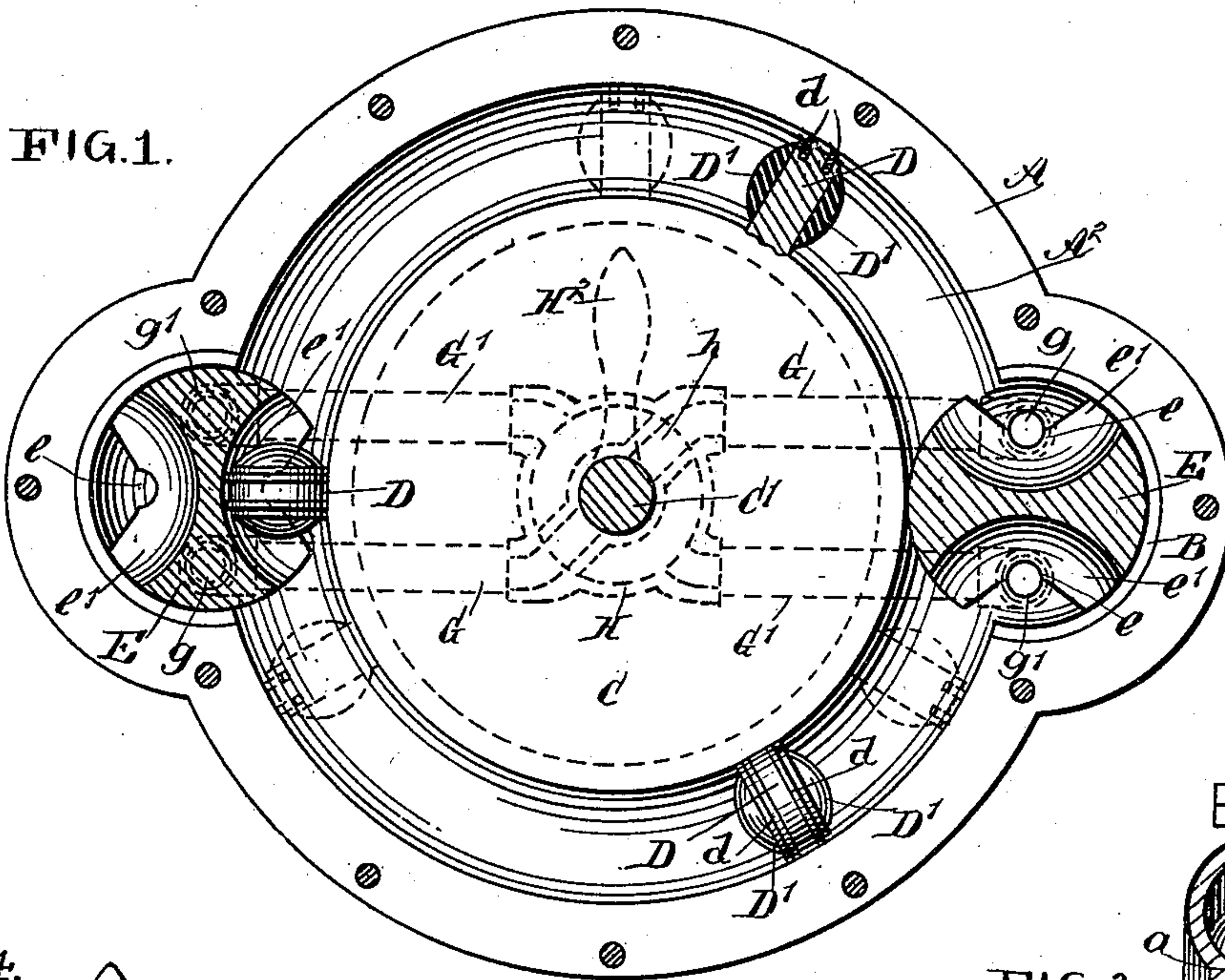


FIG. 4.

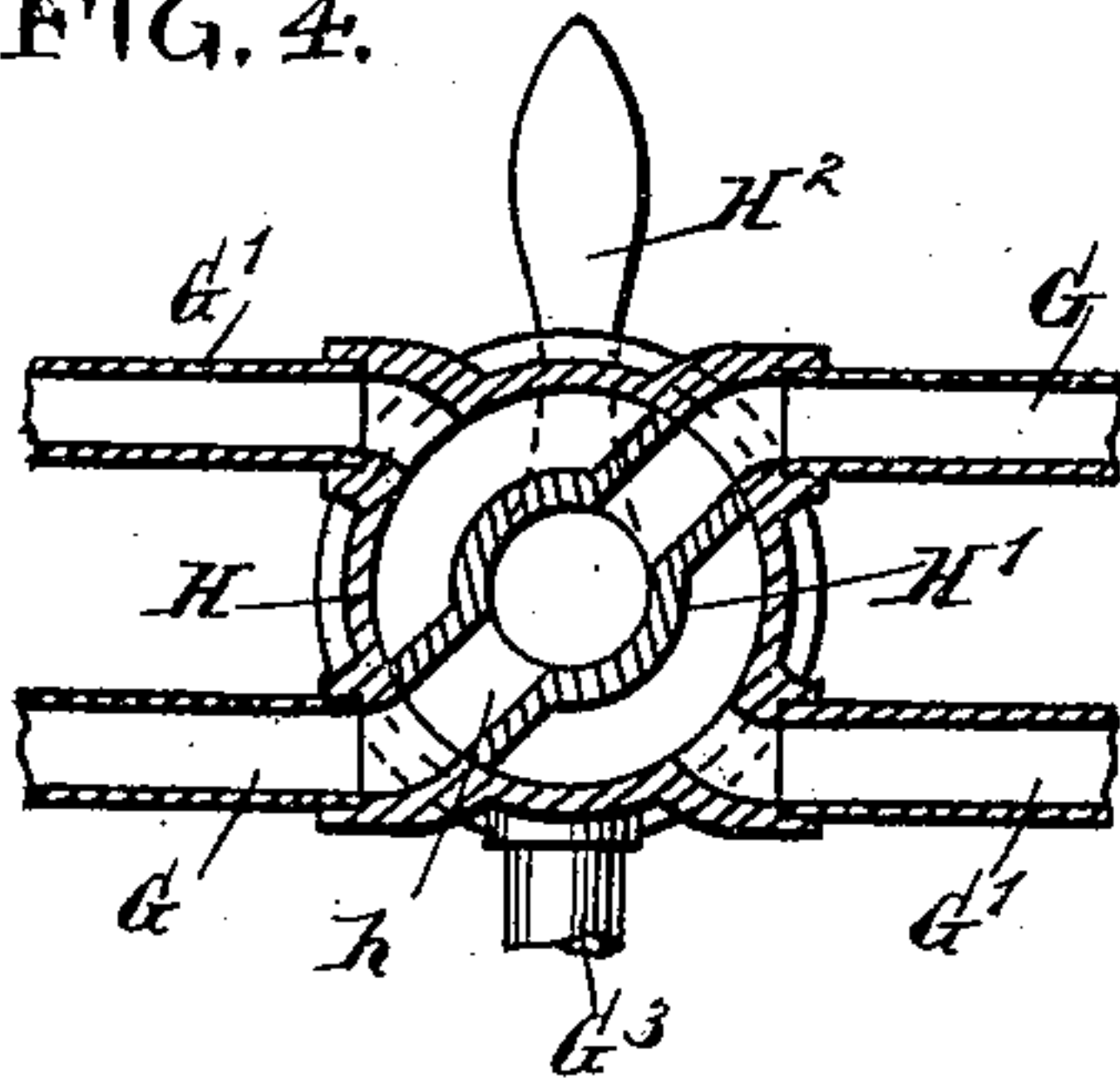


FIG. 2.

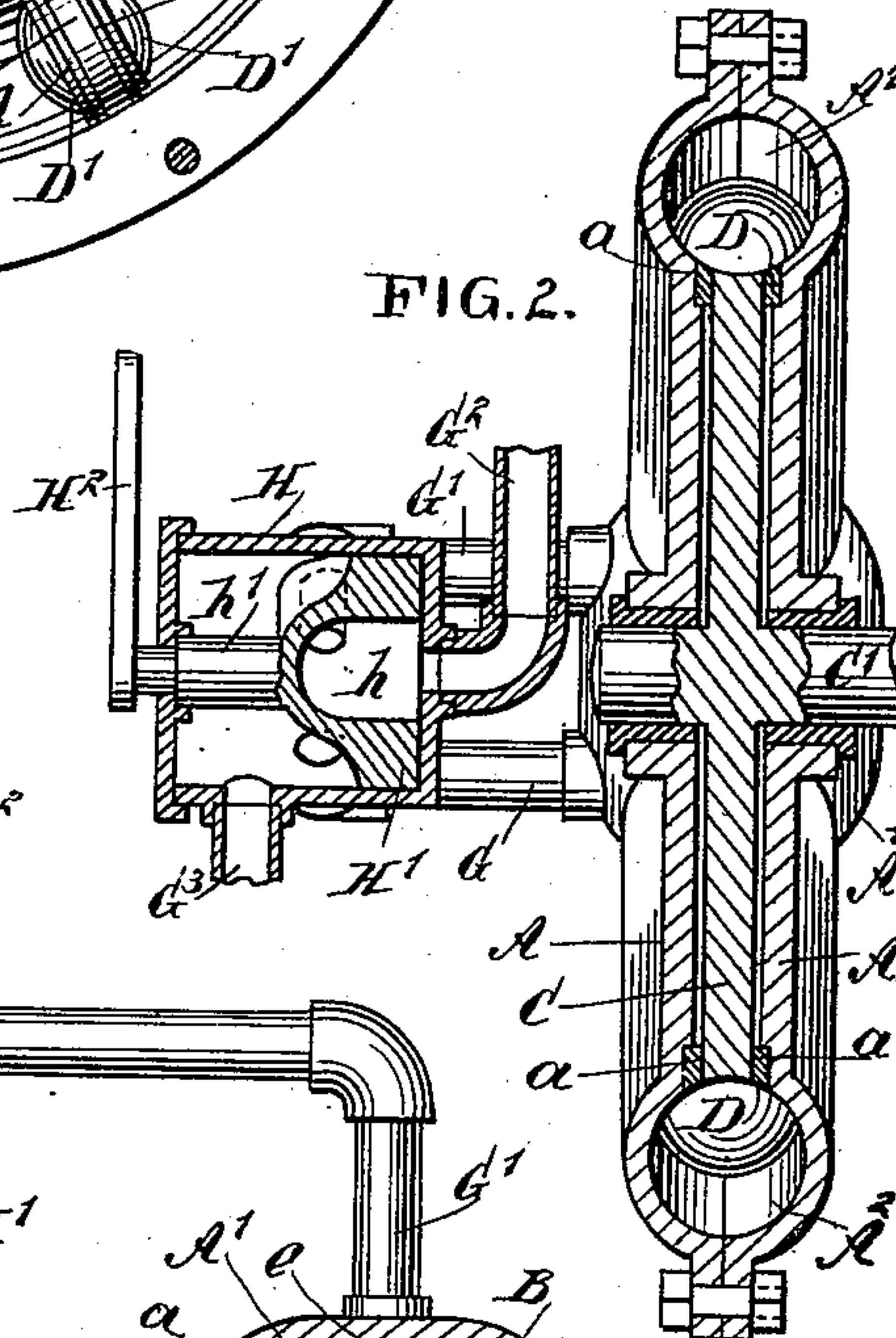
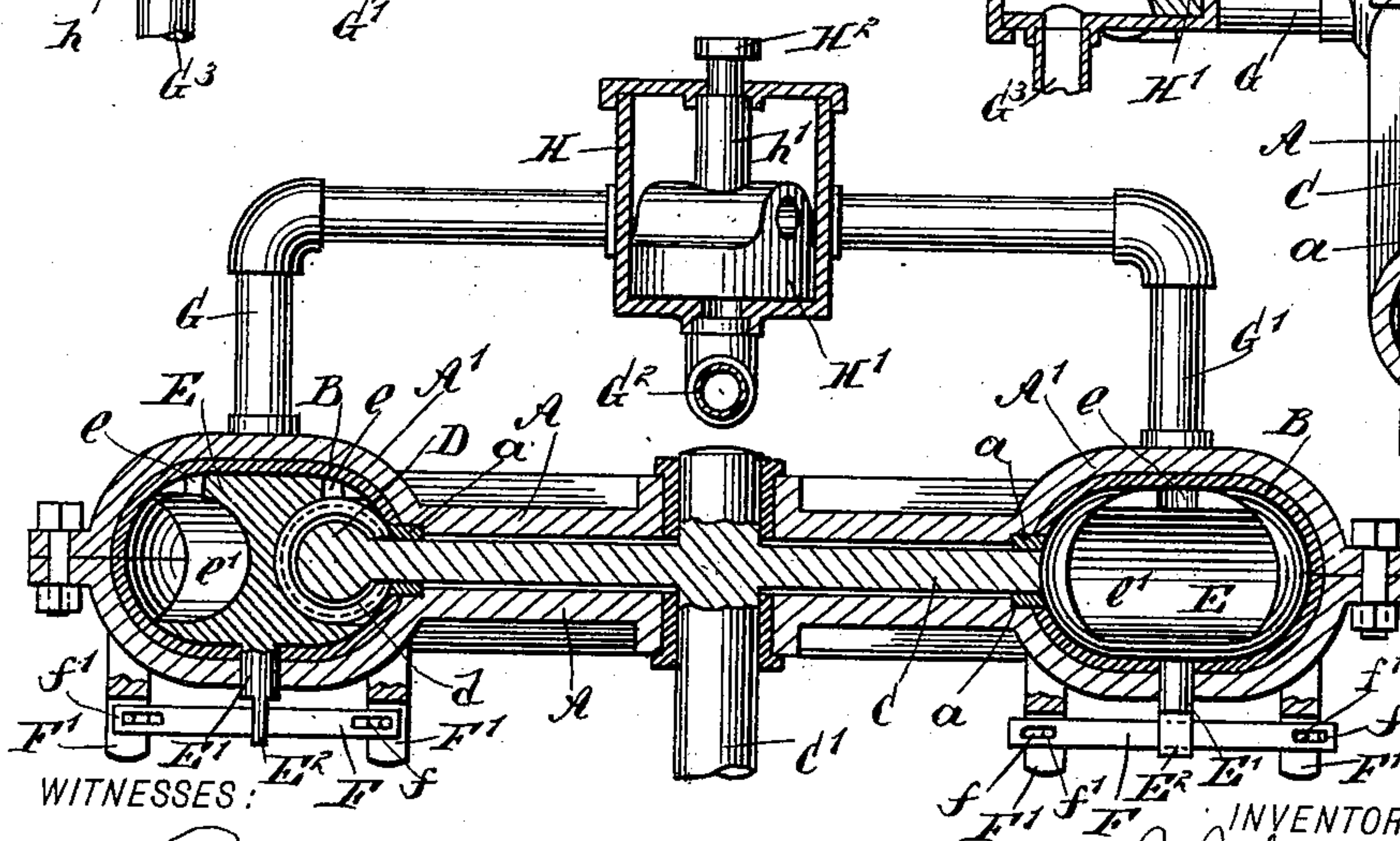


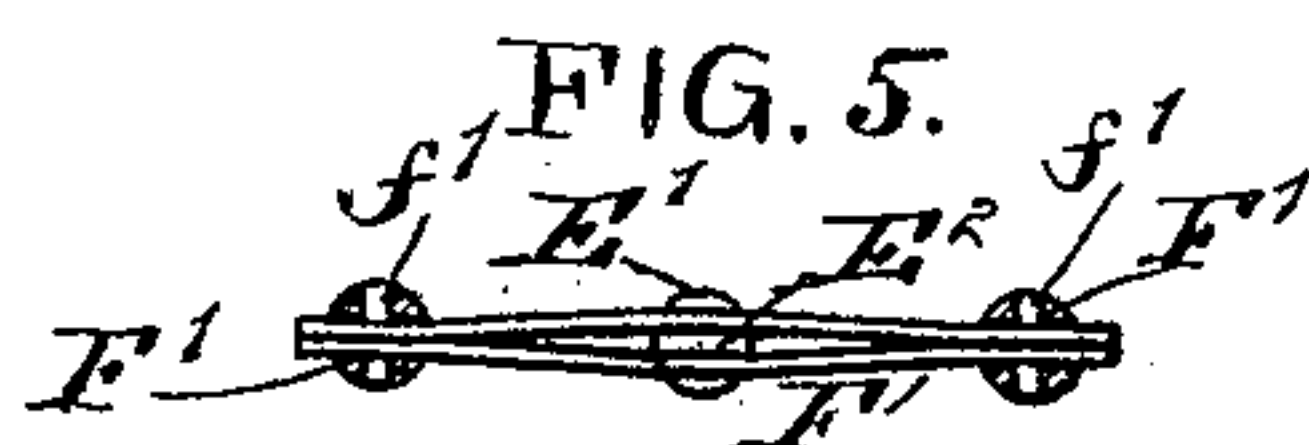
FIG. 3.



WITNESSES:

INVENTOR

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JAMES J. CALLIHAN, OF NEW ORLEANS, LOUISIANA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 618,781, dated January 31, 1899.

Application filed March 30, 1898. Serial No. 675,714. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. CALLIHAN, of New Orleans, in the parish of Orleans and State of Louisiana, have invented new and useful Improvements in Rotary Engines, of which the following is a full, clear, and exact description.

My invention relates to an improvement in rotary engines; and it consists of the novel features of construction, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation with one face of the casing which forms the cylinder removed and with the abutments in section. Fig. 2 is a vertical section taken through the casing at right angles to Fig. 1. Fig. 3 is a central horizontal section parallel with the shaft. Fig. 4 is a section taken through the reversing-valve, and Fig. 5 is an elevation showing in detail the springs which control the position of the abutments.

The casing of the engine is formed of two plates A, which are so constructed as to form when placed together an annular cylinder of circular cross-section and provided at two opposite points with recesses, forming abutment-pockets A'. The recesses are circular in outline and are so placed as to open into the cylinder-cavity A², the inner edge of the circle becoming tangent with the inner edge of the cylinder-cavity. The central portions of the plates A are separated a short distance, and between them is placed the piston-disk C, which is mounted upon a shaft C'.

The piston-disk C is provided with piston-heads D, which extend in a radial direction and are circular in outline, so as to fill the cylinder-cavity A². The peripheries of the piston-heads are grooved, so as to receive the spring packing-rings d, which are made of the ordinary construction, so as to expand against the surface of the cylinder. The side faces of the piston-heads D are provided with elastic cushions D', preferably of rubber or similar material, so as to lessen the shock of contact with the abutments. The joint where the disk C enters the cylinder-cavity is made

steam-tight by means of packing-rings a, located one upon each side of the disk.

The abutment-pockets A' are preferably provided with a lining B of brass or other suitable metal. The pockets have a circular outline in side elevation and preferably have their edges made also as sections of a circle. The abutments E are made to fill these pockets, excepting that on opposite sides they are provided with a rounded recess e', adapted to receive and pass the piston-heads D. At the sides the abutments are further cut away, so as to uncover the ports g and g', which enter the pockets A' from one side and upon each side of the center line thereof. These ports are used one for the supply-steam and the other for the exhaust and are uncovered when the abutment is in its normal position, as shown at the right in Fig. 1. The piston-heads in their revolution contact with the projecting inner portion of the abutment and rotate it upon its axis. As it rotates the ports g and g' are covered, as shown at the left in Fig. 1, thus cutting off both the supply and the exhaust.

The piston-heads D enter the recesses e' in the sides of the abutment and pass through the same, fitting closely therein, so as to prevent leakage of steam. The abutment by this means will be rotated very nearly one-half of a revolution. The further rotation of the abutment, if necessary, and its stoppage at the proper point are secured as follows: The abutment E has a shaft E' upon one side extending through the casing. Its outer end is provided with a flattened portion E², and this is engaged by flat spring-bars F, which are held closely in contact with the flattened sides of the shaft. If the abutment is stopped a little short of its proper position or thrown a little beyond its proper position, the pressure of the springs F will cause it to be thrown to the proper position and held there. The ends of the springs F are provided with slots f, within which are placed pins f' upon brackets F'.

Two steam-pipes are connected with each side of the cylinder. Of these the pipes G form one set and the pipes G' form another set. One set is used as supply-pipes while the other set is being used as exhaust-pipes. These

may be changed so that the engine may be operated in either direction. The pipes all connect with a casing H, which consists of a circular cylinder, within which is placed a valve H' of circular outline and having a passage *h* through the same diagonally and adapted to connect the diagonally-located pipes. The shaft *h'* of this valve H' extends outside the casing and is provided with a handle H², by which its position may be changed so as to reverse the direction of flow of the steam. As shown in Fig. 4, the pipes G G' are connected with the valve, so as to serve as supply-pipes. The steam-supply is furnished to the valve through a pipe G², which enters one end thereof. The exhaust is conducted from this valve by a pipe G³, which opens directly into the cavity in the casing H, and is thus connected with whichever of the pipes is not connected with the valve H'. As shown in Fig. 4 it is connected with the pipes G'.

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

1. A rotary engine having a ring-cylinder, circular abutment-cavities opening from the periphery of the cylinder-cavity, exhaust and supply ports opening into the abutment-cavities upon opposite sides of a radial line, a piston-disk having piston-heads fitting the cylinder-cavity, and abutments mounted to turn in their cavities and having curved recesses adapted to receive and pass the piston-heads and having their edges cut away on the center line of said recesses so as to uncover the ports when the abutment is in a radial position, substantially as described.

2. A rotary engine having a rotatable abutment turned by contact with the piston, a shaft therefor having a flattened section, and a transversely-extending spring engaging said flattened section and adapted to secure the proper location of the abutment, substantially as described.

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Witnesses:

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