

FIG. 1.

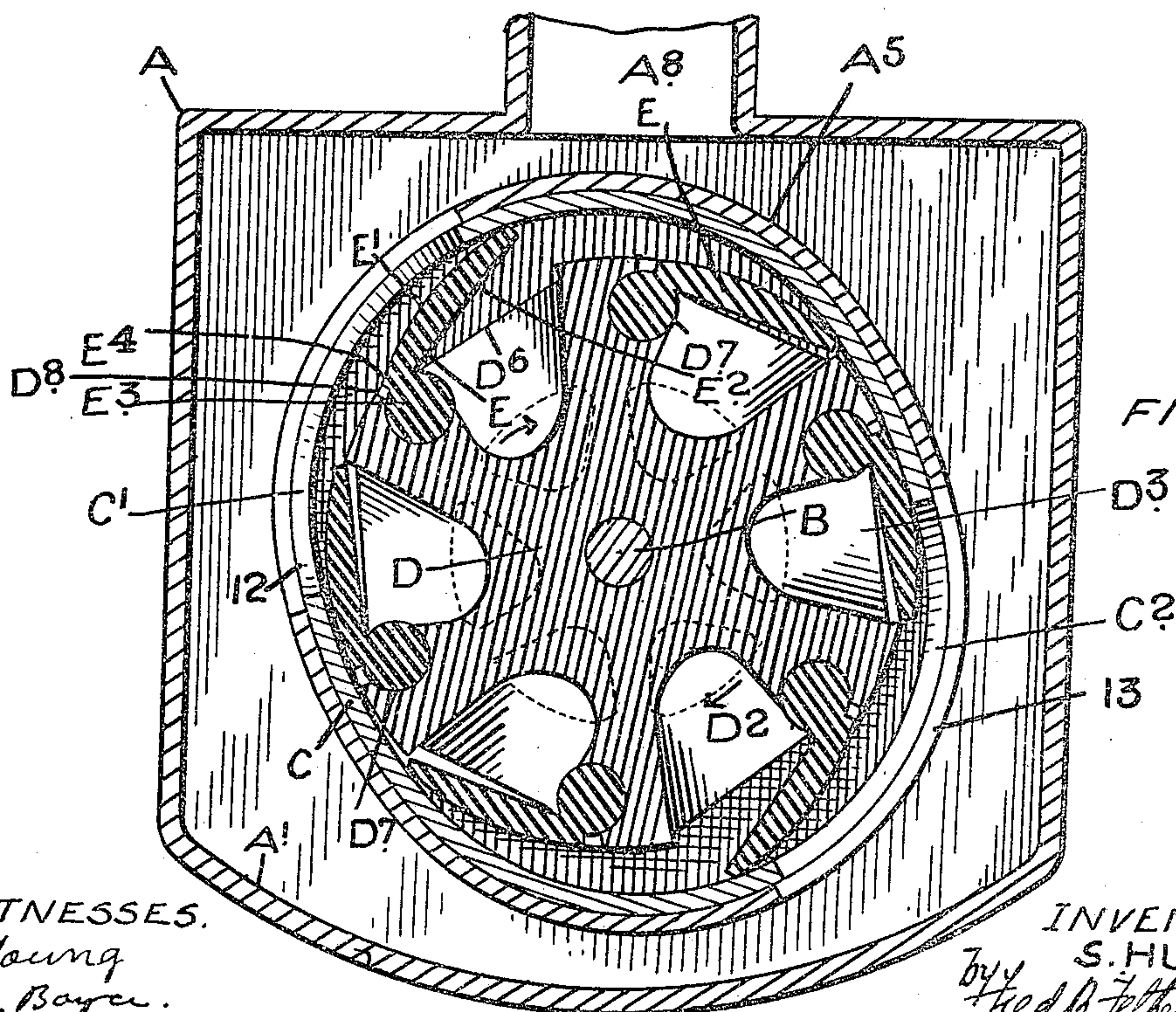


FIG. 2

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J. E. Boyer.

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S. HUGHES.
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ROTARY PUMP.

945,953.

2 SHEETS—SHEET 2..

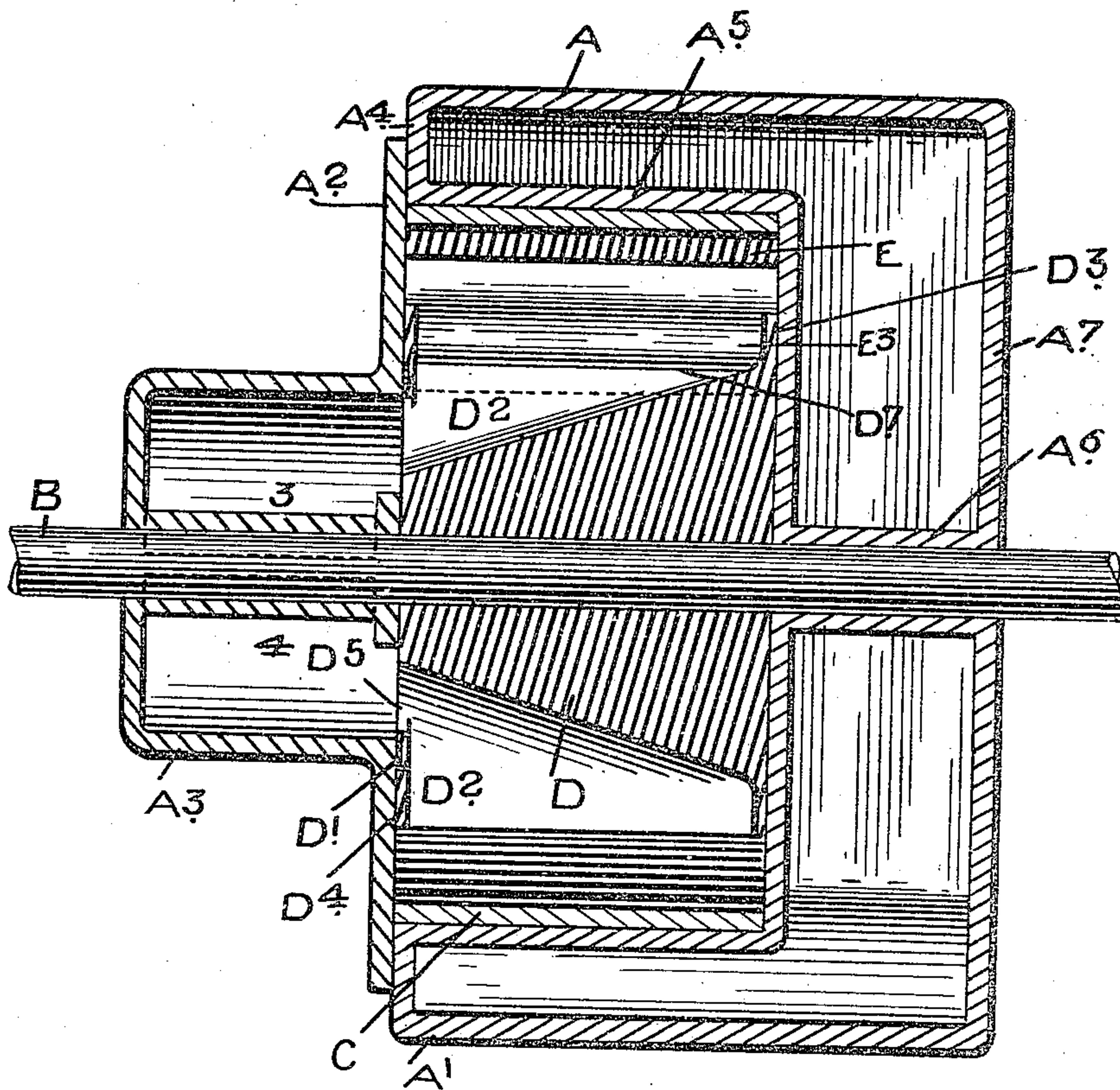


FIG. 3.

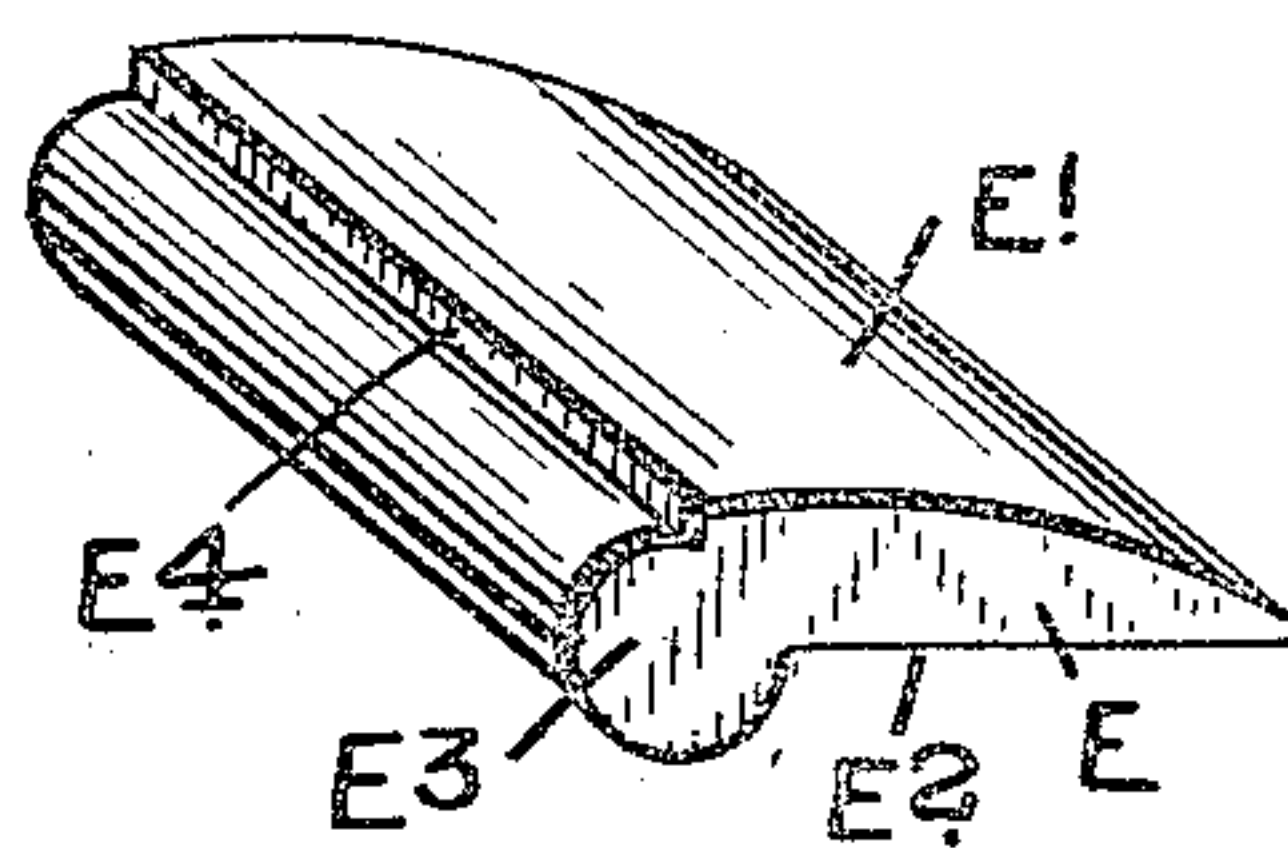


FIG. 4.

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UNITED STATES PATENT OFFICE.

SAMUEL HUGHES, OF LINDSAY, ONTARIO, CANADA.

ROTARY PUMP.

945,953.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed March 24, 1909. Serial No. 485,517.

To all whom it may concern:

Be it known that I, SAMUEL HUGHES, of the town of Lindsay, in the county of Victoria, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Rotary Pumps, of which the following is the specification.

My invention relates to improvements in rotary pumps, and the object of the invention is to devise a pump of this class, which will have a maximum capacity for a minimum amount of power.

Further objects are to make the pump simple in acting, cheap to manufacture, not liable to get out of order, self adjusting as to wear and readily repaired.

My invention consists of a casing, a shaft extending therethrough, an inlet pipe extending into one side of the casing, an axial discharge chamber extending outwardly from one end of the casing around the shaft and provided with a suitable discharge pipe, a cam-shaped internal casing, a wheel provided with a series of laterally inclined discharging flumes extending into the periphery thereof toward an orifice at the inner end of the axial discharge chamber, and blades provided with round holding end journaled in corresponding recesses in the wheel and designed to co-act with the peripheral mouths of the flumes, the parts being otherwise constructed and arranged as hereinafter more particularly explained.

Figure 1, is a perspective view of my rotary pump, portion being broken away and in section to exhibit the parts involved in my invention. Fig. 2, is a vertical section through the pump. Fig. 3, is a cross section or a section on a plane passing through the axis. Fig. 4, is a detail of the blade.

In the drawings like characters of reference indicate corresponding parts in each figure.

A is the outer casing of the pump, which may be of any desired form but mainly rectangular in shape and having an arc-shaped bottom A¹.

A² is a plate secured to one end of the casing and formed with an annular discharge chamber A³ concentric to the shaft B, which passes therethrough. The plate A² is secured by suitable bolts to the end A⁴ of the casing A, which surrounds the inner casing A⁵.

A⁶ is a bearing extending between the

inner end of the casing A⁵ and the end A⁷ of the casing A. The shaft B extends through the bearing A⁶ as indicated.

A⁸ is the intake located in the present instance at the top of the casing A and A⁹ is the discharge of the pump.

2 is a partition dividing the annular chamber A³ into upper and lower portions 3 and 4. The partition 3 is in the same plane as the center line passing through the center of the casing A⁵, which is cam shape as hereinbefore described, such cam being in the shape of an ellipse. On reference to Fig. 2, it will be seen that the elliptical casing is obliquely arranged being substantially cam-shaped. The casing A⁵ is provided with arc-shaped ports 12 and 13 opposite each other.

C is a lining made preferably of bronze and provided with ports C¹ and C² having the diagonal bridges C³.

D is the piston, which is secured to the shaft B and is circular in form and provided with end packing rings D¹, which are located between it and the ends of the casing. The piston D is provided with flumes D² preferably inclined from inside to outside to a point approaching the shaft B. The flumes D² are provided with the inner end walls D³ and the outer end walls D⁴ through which extend the orifices D⁵. The tops of the walls D³ and D⁴ form straight recessed seats D⁶.

D⁷ is a recess located at one end of each flume, such recess being round and extending from edge to edge of the piston D.

E are blades provided with arc-shaped outer faces E¹ and suitably formed inner faces E² and rounded ends E³, which fit into the recesses D⁷ into which they are inserted through the end of the piston. The rounded ends E³ fitting into the recesses D⁷ form a hinge on which the blades E swing. At the inner end of the arc-shaped outer face E¹ of the blade I provide a shoulder E⁴, which is designed to abut a shoulder forming part of the piston, so as to limit the outward throw of the blade.

The operation of my pump is as follows. The shaft B is driven by a suitable motor, so as to cause the piston to rotate in the direction as indicated by arrow in Fig. 1. The blades E as they rotate are caused by the cam-shaped form of the lining C to close the flume D⁵ and in thus closing the water

is carried from the intake A^8 through the piston and flumes thereof and substantially longitudinally out into the discharge casing A^3 , thence through the discharge A^9 . The water passing through the ports 12 and 13 and C^1 and C^2 is carried by the blades as hereinbefore described through the flumes D^5 thus as the blades E close continually cutting off the supply of water and forcing it continually into the discharge end of the casing.

Although I have shown and described in this specification one embodiment of my invention it will be understood that the form of the cam-shaped casing may be altered. For instance, it might be eccentric or otherwise formed in order to give the desired movement to the blades. The casing and lining thereof might also be formed with only one port in which case, of course, the blades would have a single movement inwardly and outwardly at each rotation. It will, however, be understood that many changes may be made in the details of my invention without departing from the spirit thereof.

What I claim as my invention is:

1. In a rotary pump, the combination with the casing having suitable intake and discharge ports, a shaft suitably journaled in the casing and the cam-shaped inner casing attached to or forming part of the outer casing provided with a suitable peripheral port, of a circular solid piston suitably secured to the shaft and provided with flumes in the periphery inclined from the inner end to the discharge end, and blades hinged at one edge of the flumes in the piston and designed to be thrown inwardly and outwardly during its rotation by the cam-shaped casing, so as to close the peripheral entrance of the flumes as and for the purpose specified.

2. In a rotary pump, the combination with the casing having a suitable intake port at one side and an axial discharge chamber at one end, the main casing provided with a discharge port and the cam-shaped inner casing attached to or forming part of the outer casing and provided with a peripheral port, of a circular solid piston suitably secured to the shaft and located in the casing and provided with flumes in the periphery inclined from inside to outside, and end walls, and round cross recesses, of the blades provided with rounded inner ends fitting in corresponding recesses in the piston and arc-shaped outer faces and suitably formed

inner faces as shown and for the purpose specified.

3. In a rotary pump, the combination with the casing having a suitable intake port at one side and an axial discharge chamber at one end, the main casing provided with a discharge port and the cam-shaped inner casing attached to or forming part of the outer casing and provided with a peripheral port, of a circular solid piston suitably secured to the shaft and located in the casing and provided with flumes in the periphery inclined from the inside to the discharge end and blades in said flumes as and for the purpose specified.

4. The combination with the casing having a suitable intake port at one side, and an axial discharge chamber at one end of the casing provided with a central partition, and a discharge port opposite said partition, and the elliptical inner casing attached to or forming part of the outer casing and provided with peripheral ports oppositely located, a circular solid piston suitably secured to the shaft and located in the casing and provided with flumes in the periphery and end walls, and orifices at the discharge end, and round cross recesses at one edge of the flumes, of the blades provided with rounded ends fitting in the recesses, and arc-shaped outer faces and suitably formed inner faces as and for the purpose specified.

5. The combination with the casing having a suitable intake port at one side, and an axial discharge chamber at one end of the casing provided with a central partition, and a discharge port opposite said partition, and the elliptical inner casing attached to or forming part of the outer casing and provided with ports oppositely located, a circular solid piston suitably secured to the shaft and located in the casing and provided with flumes in the periphery having end walls provided with suitable seats for the inner side of the blades, and orifices at the discharge end, and round cross recesses at the edge of the flumes, of the blades provided with rounded ends fitting in the recesses, and arc-shaped outer faces and suitably formed inner faces, and a lining for the inner casing provided with ports registering with the ports in the inner casing as and for the purpose specified.

SAMUEL HUGHES.

Witnesses:

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