(No Model.) 2 Sheets—Sheet 1.

D. HOAGLAND.

ROTARY ENGINE.

No. 512,883. Patented Jan. 16, 1894.

Fig. 1.

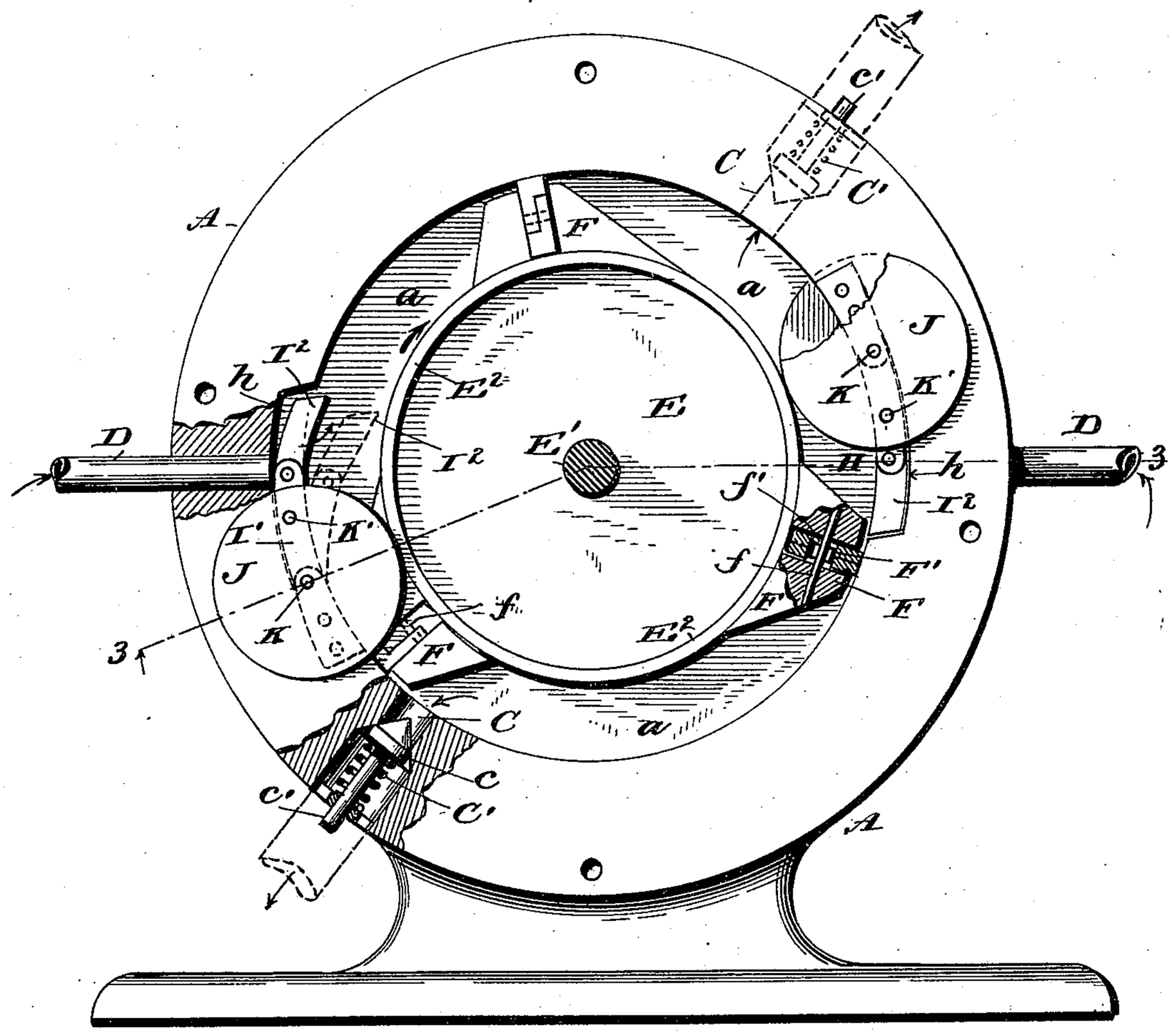
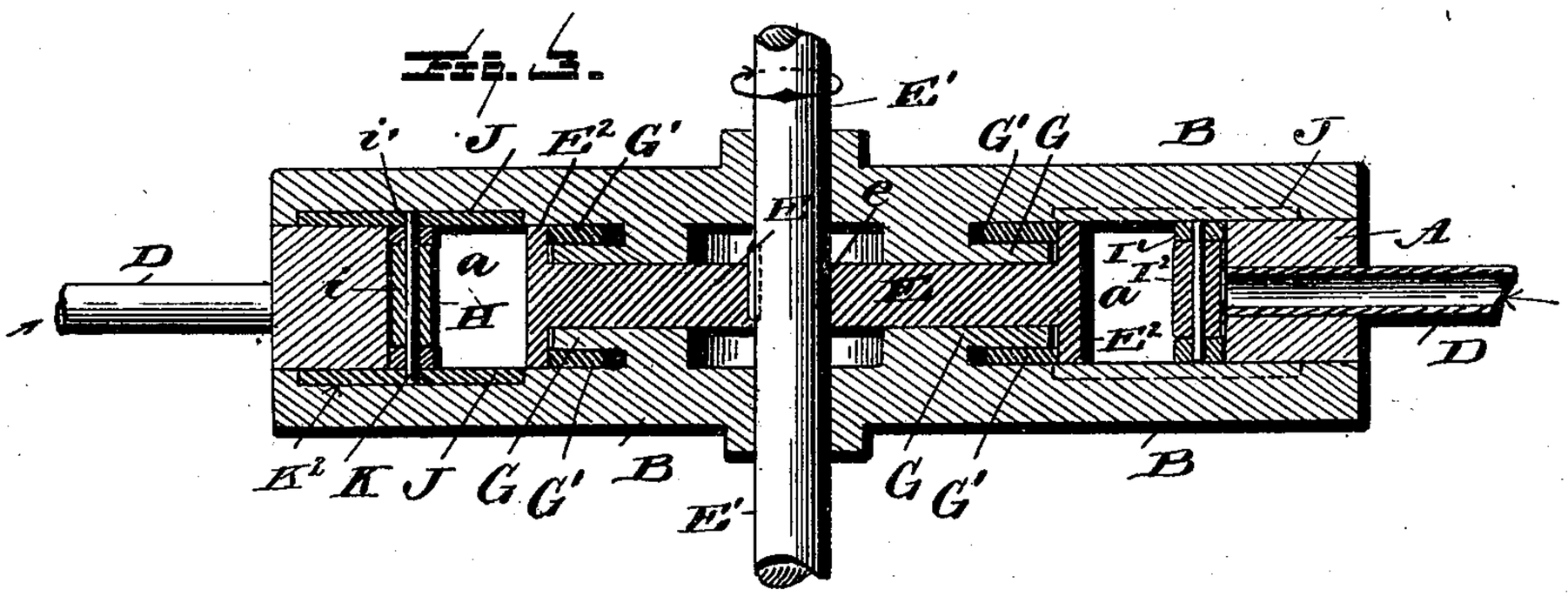


Fig. 3.



Witnesses
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

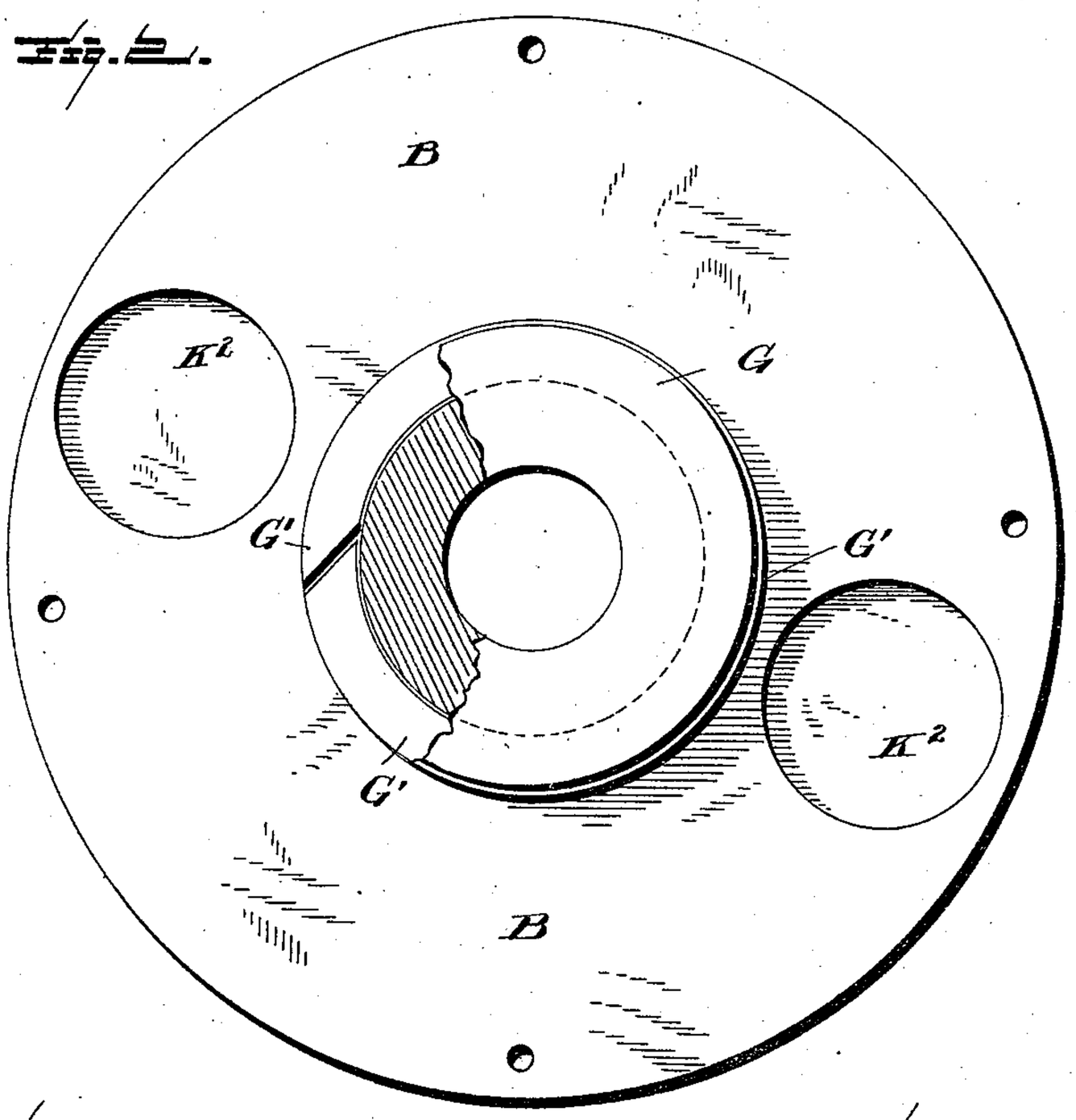


Fig. 6.

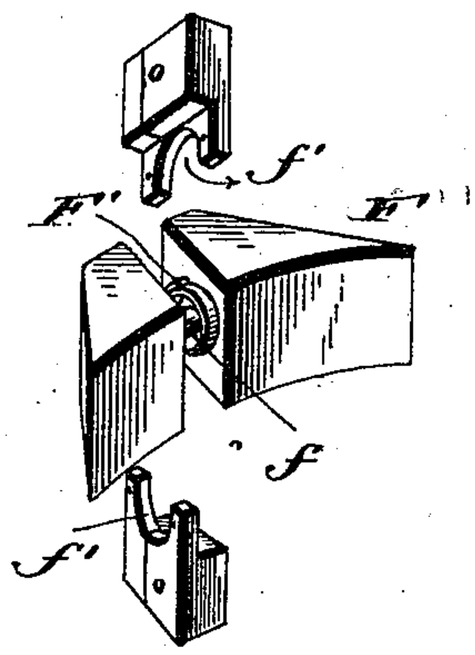
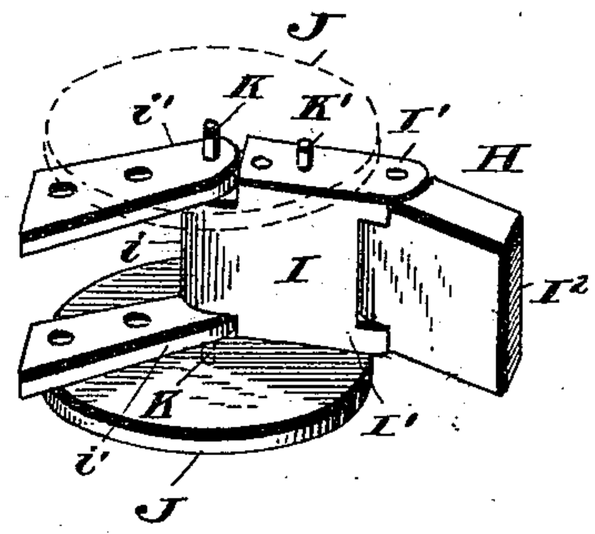


Fig. 5.



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UNITED STATES PATENT OFFICE.

DAVID HOAGLAND, OF NORPHLET, ARKANSAS.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 512,883, dated January 16, 1894.

Application filed April 29, 1893. Serial No. 472,399. (No model.)

To all whom it may concern:

Be it known that I, DAVID HOAGLAND, a citizen of the United States, residing at Norphlet, in the county of Union and State of Arkansas, have invented certain new and useful Improvements in Rotary Engines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in rotary engines and it has for its objects among others to provide a simple, cheap yet efficient rotary engine composed of few parts and those readily assembled and not liable to get out of order.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claims.

The invention in the present instance resides in the peculiar combinations, and the construction, arrangement and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then particularly pointed out in the claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a side view with one of the heads removed. Fig. 2 is an inside view of one of the heads. Fig. 3 is a central section through the disks on the sides of the double-hinged valves, on line 3, 3 of Fig. 1. Fig. 4 is a view of one of the follower heads removed showing also its packing, separated. Fig. 5 is a perspective view of one of the double-hinged valves removed.

Like letters of reference indicate like parts throughout the several views in which they appear.

Referring now to the details of the drawings by letter, A designates the cylinder and B its heads. The heads are designed to be detachably affixed in position in any suitable manner so they can be easily removed for repairs or for any other purpose.

C are exhaust ports affording communication between the outside of the cylinder and the steam space *a* thereof; they may have connections leading to any desired place. These exhaust ports are arranged diametrically opposite each other as shown.

D are the steam inlets, designed to be connected with any suitable source and these are arranged diametrically opposite to each other and substantially at right angles to the exhaust ports as shown.

In each of the exhaust pipes there is arranged a valve *c* consisting of a conical portion provided with a stem *c'* and a spring C'.

E is a solid wheel with a central opening *e* for the shaft E', the heads each having a coincident hole as shown. This wheel has a rim E^2 to the outer periphery of which the follower heads are affixed. The steam space of the engine is formed between the outer face of this wheel and the inner wall of the cylinder as shown. The spring-held valves in the exhaust ports serve to retain a small amount of steam for the double hinged valves to cushion against to relieve the parts of friction.

F are the follower heads, there being three in this instance; they are secured to the outer face of the rim of the wheel E in any suitable manner and have inclined faces as shown. Each is formed of two parts connected by a dowel pin or other means *f* as shown, there being packing between the adjacent faces of the two parts. This packing consists of the two parts halved together and having an opening between them as seen at *f'* for the passage of the connecting means *f* and for a spring F' as shown. Each head has a flange or ring G fitting within the rim of the wheel E as shown and each of these flanges has a groove in which is seated a split ring G' as shown.

Opposite each steam port there is seated in a recess *h* in the inner face or wall of the cylinder a double hinged valve H which consists of the ears or lugs *i* suitably held in place as upon the lugs *i'* on the inner wall of the cylinder, and to these lugs are pivoted or hung the one part I of the valve; this part has the lugs I' extending therefrom to which is pivoted or hinged the other part I^2; the valve as a whole is adapted to close within the recess in the wall of the cylinder.

J are disks which have passed centrally

therethrough the pins or rods K which serve as the pivots of the main portions of the valves while through the disks near their periphery pass the pins K′ which pass into the lugs I′ as shown. These disks are seated in correspondingly-shaped recesses K^2 in the inner faces of the heads.

The operation will be readily understood from the foregoing description when taken in connection with the annexed drawings, and a further detailed description thereof is not deemed necessary.

A rotary engine constructed substantially as above set forth has no dead centers; it possesses greater power than the old forms; the motion is more regular and uniform. When the steam is shut off at one port the whole force is passing through the other port; the double-hinged valves are automatic or self-adjusting. The follower heads coming in contact with the double-hinged valves operate them against the force of the incoming steam.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim as new is—

1. The combination with the cylinder and the inner wheel with flange, of the heads with collars fitting within said flange or rim, and provided with grooves, and split rings in said grooves, substantially as specified.

2. The combination with the cylinder and its double-hinged valves, of the wheel with rim and the follower heads on the outer face of said rim, as set forth.

3. The combination with the cylinder with double-hinged valves, of the wheel with its rim and follower heads, and the disks connected with the double-hinged valves, substantially as shown and described.

4. The combination with the cylinder with its exhaust ports with valves, of the double-hinged valves and the wheel with rim and follower heads, as set forth.

5. The combination with the cylinder with its steam and exhaust ports, of the valves in the exhaust ports, the wheel with rim and follower heads, and the double-hinged valves, all substantially as shown and described.

6. The combination with the cylinder with its steam and exhaust ports, of the wheel with its rim and follower heads with packing, the valves in the exhaust ports, the double-hinged valves, and the disks connected therewith, as set forth.

7. The combination with the cylinder with its steam and exhaust ports, of the wheel with rim and follower heads, the valves in the exhaust ports, the double hinged valves and their disks, and the heads with recesses to receive said disks, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID HOAGLAND.

Witnesses:

J. A. DUMAS,

J. G. DUNBAR.