

(No Model.)

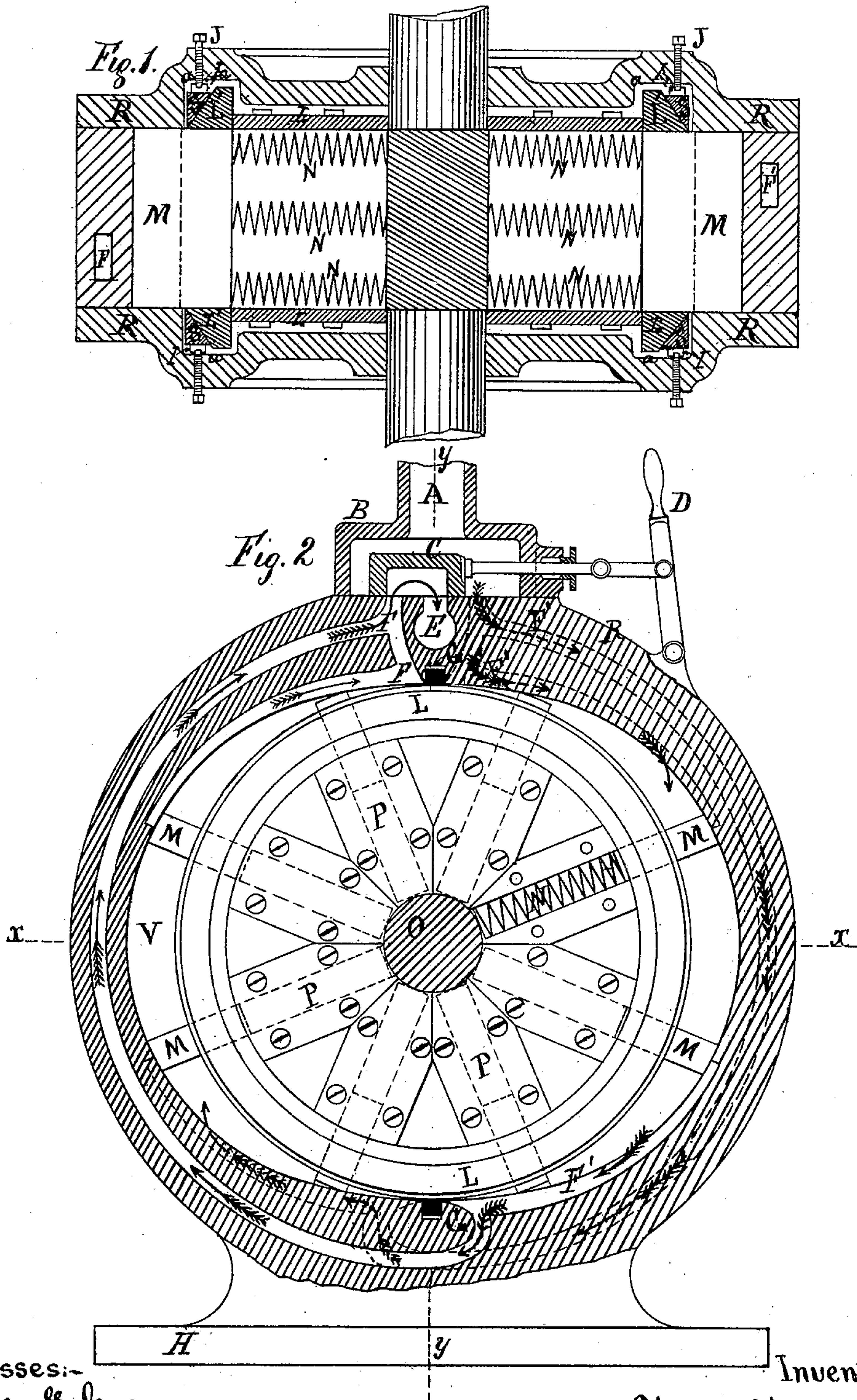
2 Sheets—Sheet 1.

H. THIBALT & T. HAWKINS.

Rotary Engine.

No. 230,907.

Patented Aug. 10, 1880.



Witnesses:
Charles E. Coe
Louis W. Frost

Inventor:
Henry H. Thibalt
Thomas Hawkins

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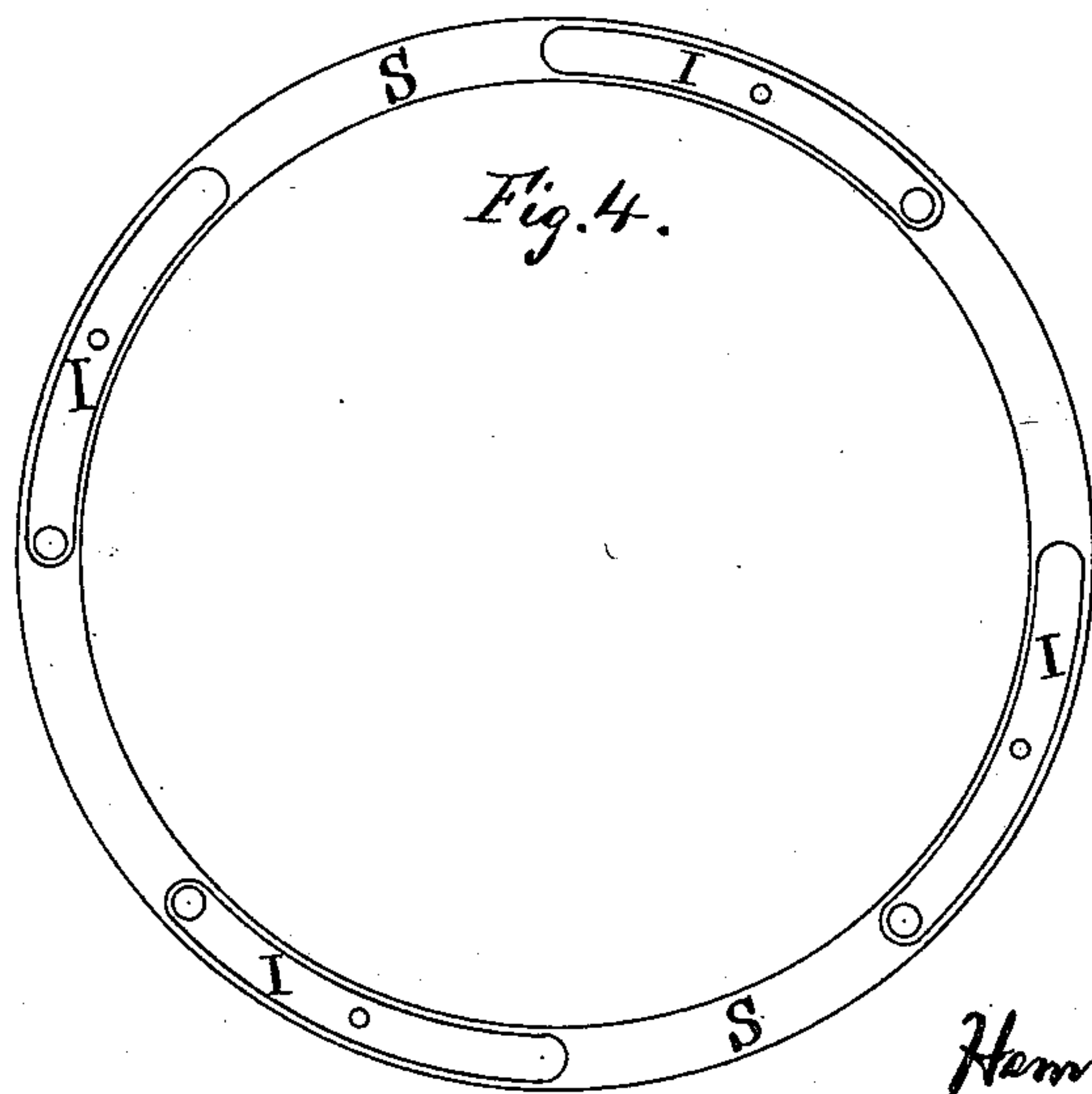
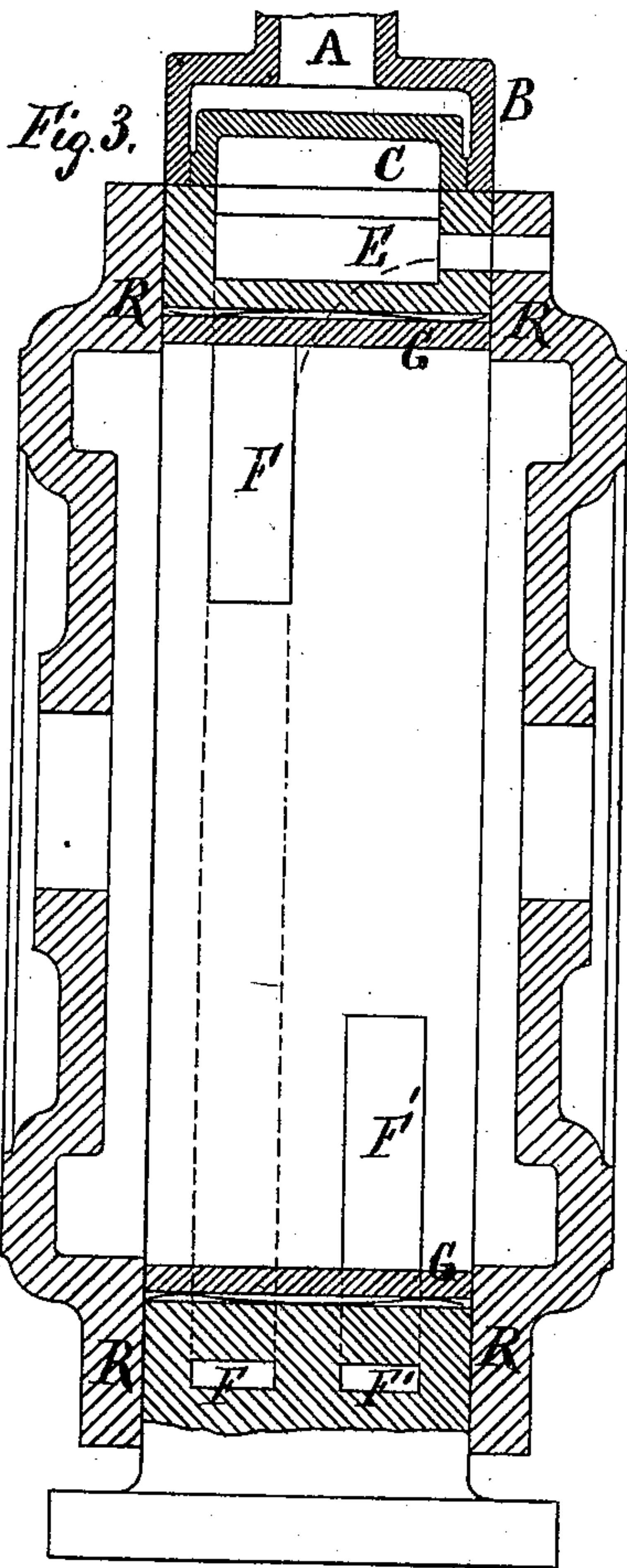
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UNITED STATES PATENT OFFICE.

HENRY THIBALT AND THOMAS HAWKINS, OF NEW YORK, N. Y.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 230,907, dated August 10, 1880.

Application filed May 27, 1880. (No model.)

To all whom it may concern:

Be it known that we, HENRY THIBALT, a citizen of the United States, and THOMAS HAWKINS, a citizen of Great Britain, and both residing in the city, county, and State of New York, have invented a new and useful Improvement in Rotary Engines; and we do hereby declare the following, taken in connection with the accompanying drawings, to be a full, clear, and accurate description of the same.

Our invention relates to rotary engines; and it consists in certain improvements therein, as hereinafter more fully set forth, and pointed out in the claims.

In the drawings, Figure 1 represents a cross-section of our improvement in the line $x x$ of Fig. 2. Fig. 2 represents a vertical section of the same. Fig. 3 represents a vertical section in the line $y y$ of Fig. 2. Fig. 4 represents the packing-rings.

Our improvement is made as follows: A case, R, is mounted or secured on a bed, H. This case R is provided with channels or ports F and F', for the passage of steam, and recesses $a a$. Within the case R revolves a drum, L, connected with and secured to a shaft, O. The drum L is provided with end flanges, L', beveled outwardly, and eight sliding pistons, M, which slide in receptacles provided in the drum L, and which pistons M rest on springs N, which are for the purpose of holding the pistons M in position to take steam, and at the same time to diminish the shock when the pistons M, by the revolution of the drum L, are forced down by contact with the case R in the receptacles of said drum L. These receptacles are covered with the covers P, as shown in Fig. 2.

The flanges L' of the drum L are beveled, as shown in Fig. 1, to correspond with the packing-rings S, one side of which is also beveled. These packing-rings S are fitted between the case R and flanges L' of the drum L and the recesses a of the case, for the purpose of packing the joint between said case and drum, thus preventing the escape of steam and rendering the said joint steam-tight. These packing-rings S are provided on their backs with flat springs I, (shown in Fig. 4,) to prevent the rings from binding. The said rings S are tightened or loosened and adjusted by means

of the set-screws J, (shown in Fig. 1,) and which set-screws work upon the springs I at their center.

Steam is admitted to the engine by means of the feed-pipe A, which connects with the steam-chest B, which is connected with the ports F F' of the case R. The steam admitted to these ports F F' by means of the valve C, connected with the steam-chest B, passes thence into the steam-spaces V V between the case R and drum L.

The drum L and case R are so arranged in relation to each other as to cause the steam-spaces V at portions of their circumference to be of such depth as will allow the pistons M to be acted on by the pressure of the steam, and then to cause the said steam-spaces V to taper gradually, so that the drum and case nearly touch, as shown in Fig. 2.

E represents the exhaust-pipe for the steam to pass out after it has exerted its pressure on the sliding pistons M.

G G are two springs or face-packing for the drum L, which are placed between the drum L and case R for the purpose of preventing the escape of steam between the drum and the case at the points where said packing is placed.

D is a lever, connected by a rod with the valve C for the purpose of reversing the engine when desired.

The mode of operation of our improvement is as follows: The steam enters the steam-chest B through the feed-pipe A, and thence passes into the ports or channels F' of the case R, following the direction of the arrows shown in Fig. 2, and thence passes into the steam-spaces V V at the same time. Two pistons, M, one on each side of the drum L, are held out in position by the springs N, ready to take steam, and the steam, entering the steam-spaces V V, exerts pressure on said two pistons M, at the same time, and thus causes the drum L and shaft O to revolve, and the steam, thus acting on two opposite sides of the drum at the same time, relieves the shaft O from the weight which would be caused by the pressure of the steam on the face of the drum were the steam admitted to one side only of the drum. The pistons M, as they are carried around the circle by the revolution of the drum L, are forced down into the receptacles of the drum as they

pass from the beginning of the inner ports, F F', of the case R to the points at G. (Shown in Fig. 2.) The said pistons M, after passing the said points G, are forced out into the steam-spaces V V, so as to take steam, by means of centrifugal force, aided by the springs N. The steam, after exerting its pressure on the pistons M as they pass through the steam-spaces V V, passes out of the exhaust-pipe E.

10 If it is desired to reverse the engine, the lever D is pulled, which acts on the valve C and allows the steam to flow into the opposite ports F F', and thus reverse the action of the engine. The engine can also be packed while running

15 at full speed by turning the set-screws J on the outside of the case, which adjust the packing-rings S, thereby avoiding all trouble and waste of time in packing, as is the case in packing other engines.

20 Our construction of case is such that there is no action of the steam on the pistons while working in and out of the drum, thereby preventing friction and insuring long wear of pistons. The pistons are isolated or separated

25 from each other in each of their receptacles, so that steam cannot escape from one to the other, thereby preventing the steam from interfering with the pistons out of action. The

engine, as so constructed, will also have no dead-points, and there is no loss of power at any point of the revolution of the drum. 30

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination, with the case R, provided with recesses *a a*, of the drum L, having beveled flanges L', beveled packing-rings S, provided with flat springs I, and set-screws J, substantially as described, and for the purpose set forth. 35 40

2. The combination, with the case R, having the recesses *a a* and steam-ports F F', of the drum L, provided with the beveled flanges L', sliding pistons M, and springs N, steam-spaces V, covers P, beveled packing-rings S, having flat springs I, and set-screws J, the whole constructed, arranged, and operated in the manner and for the purpose set forth. 45

In testimony whereof we have hereunto set our hands this 24th day of May, 1880.

HENRY THIBALT.
THOMAS HAWKINS.

In presence of—

CHARLES G. COE,
R. F. VAN BOSKIRCK.