

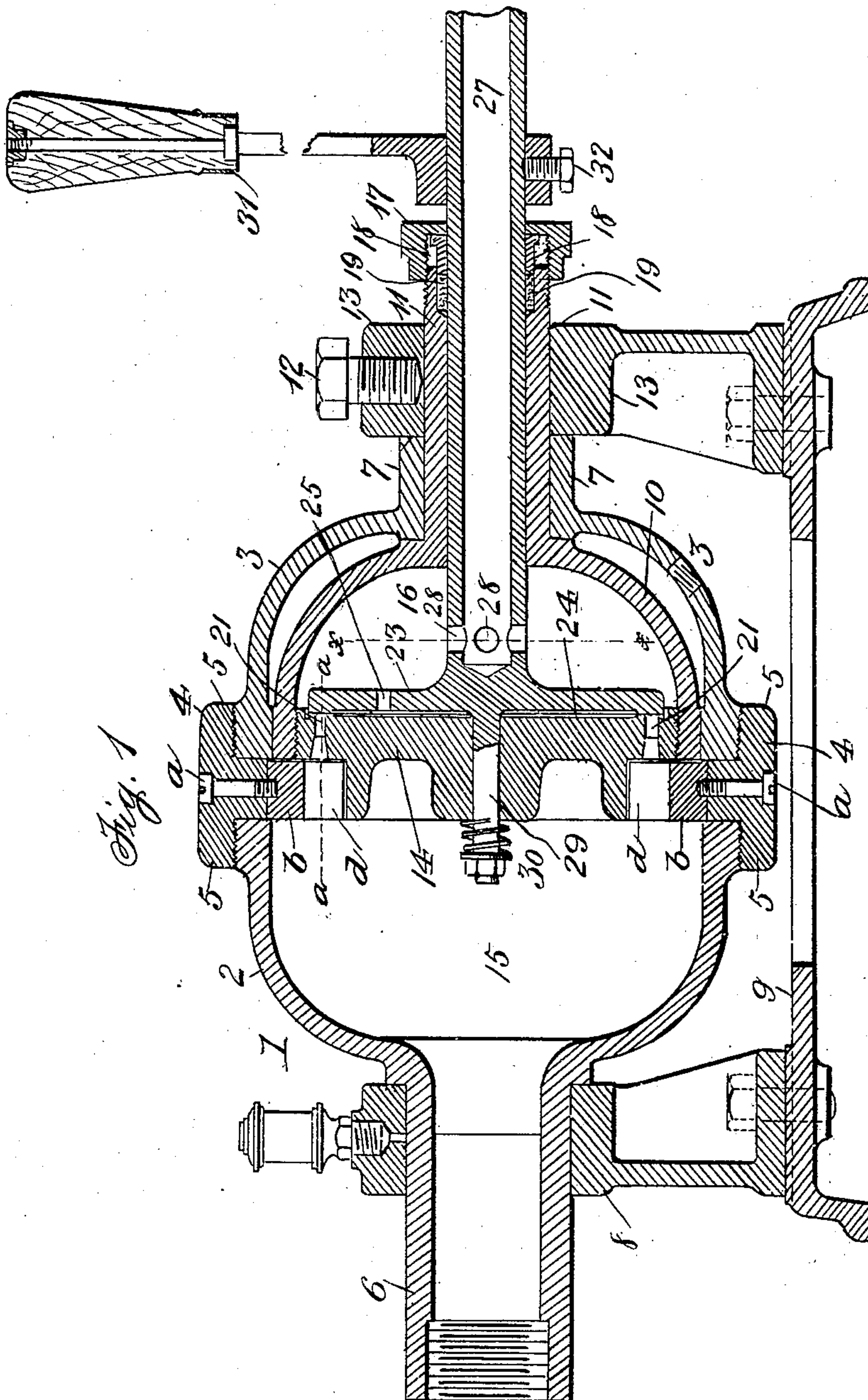
No. 863,524.

PATENTED AUG. 13, 1907.

L. S. FLATAU.
ROTARY ENGINE.

APPLICATION FILED DEC. 21, 1906.

5 SHEETS—SHEET 1.



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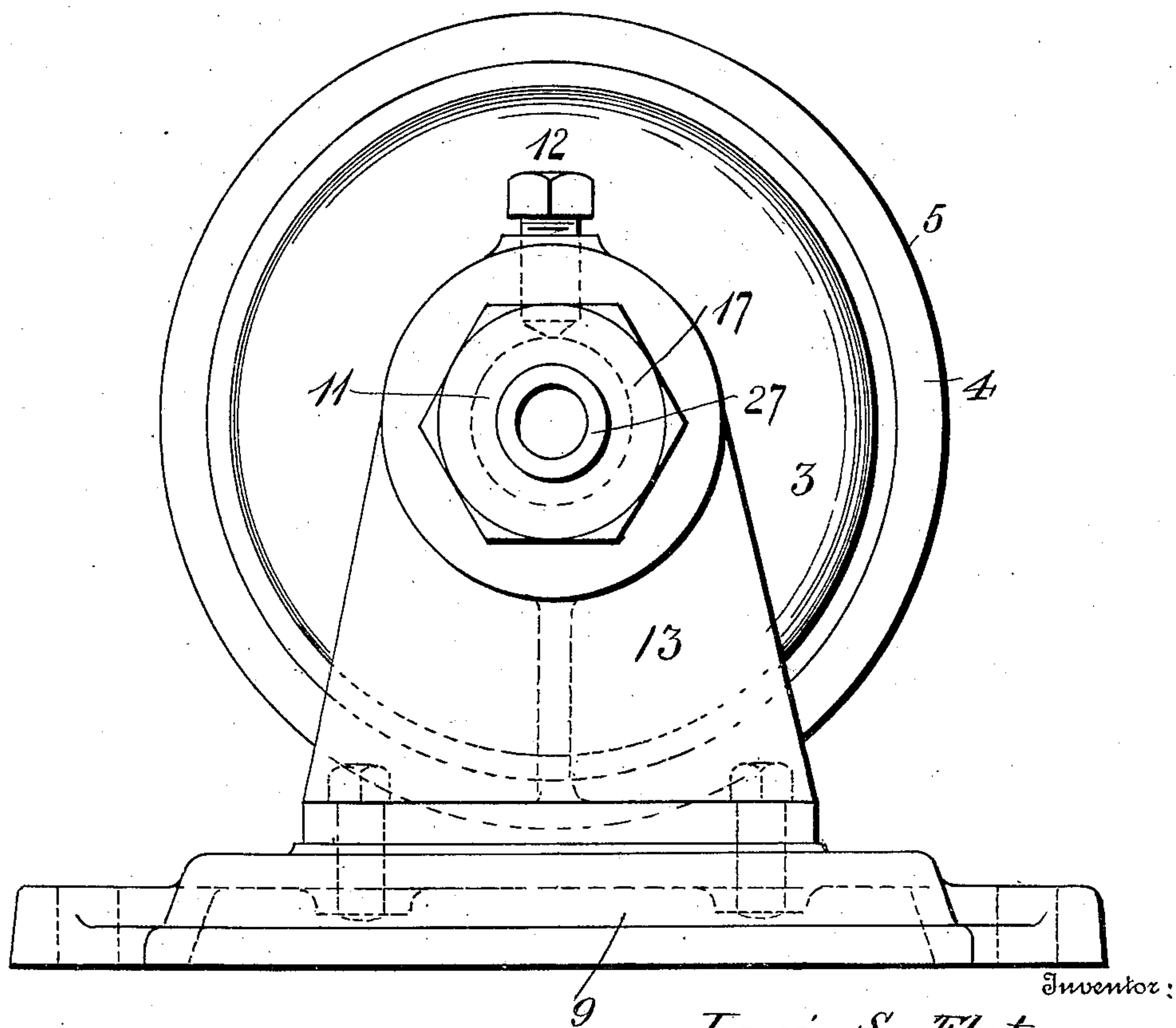
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6 SHEETS—SHEET 2.

Fig. 2.



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6 SHEETS—SHEET 3.

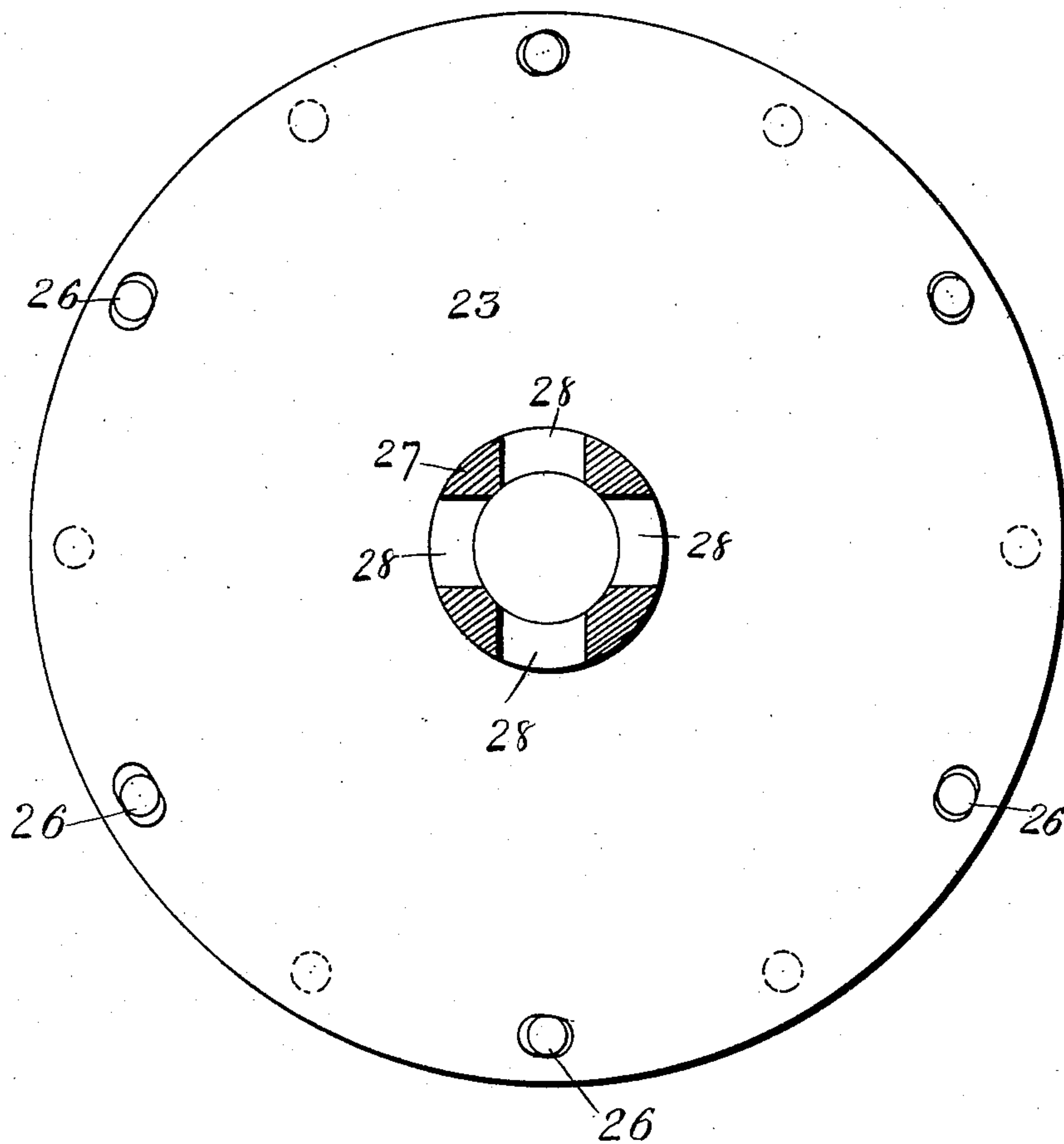


Fig. 3.

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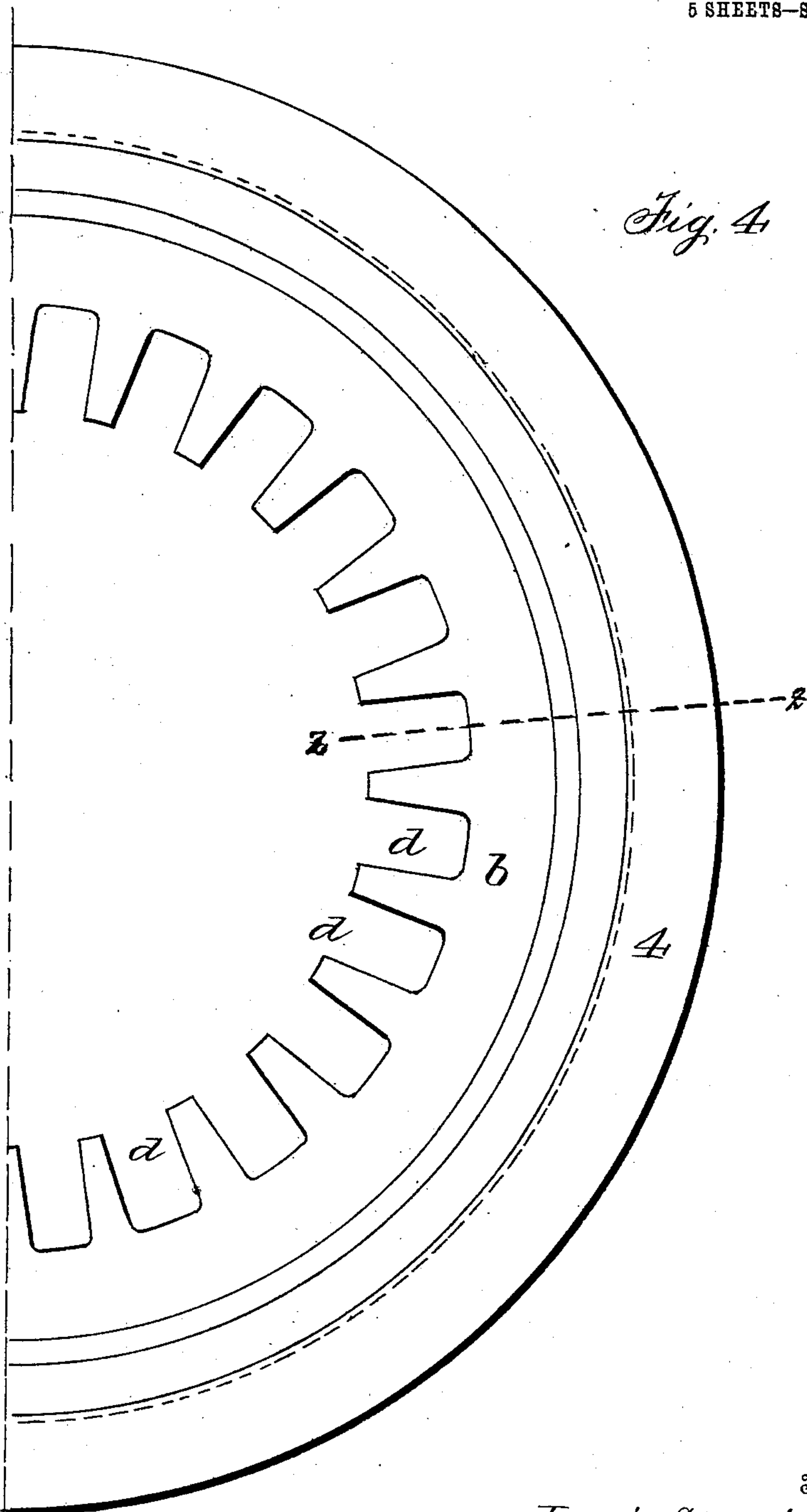
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5 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.

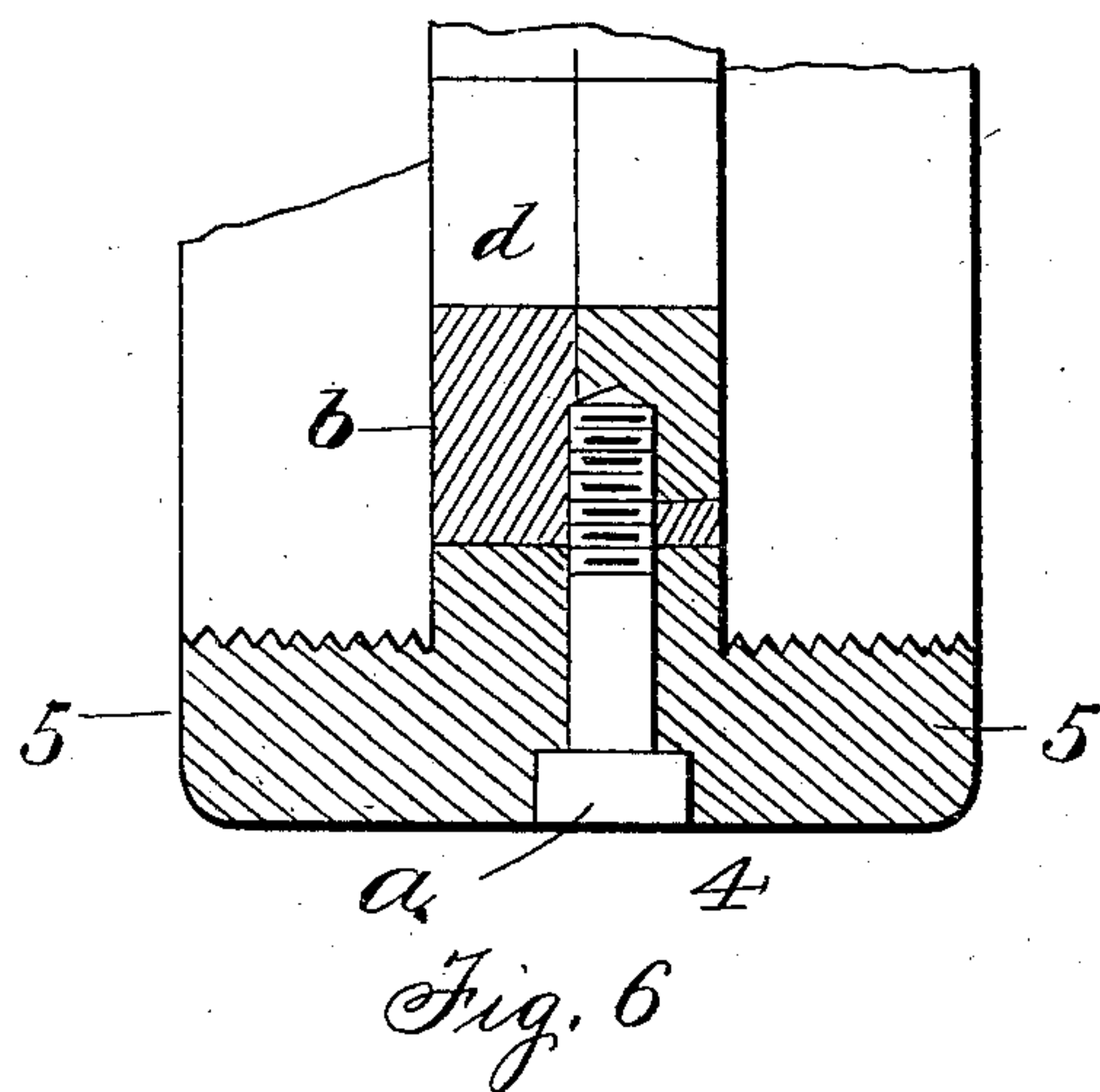
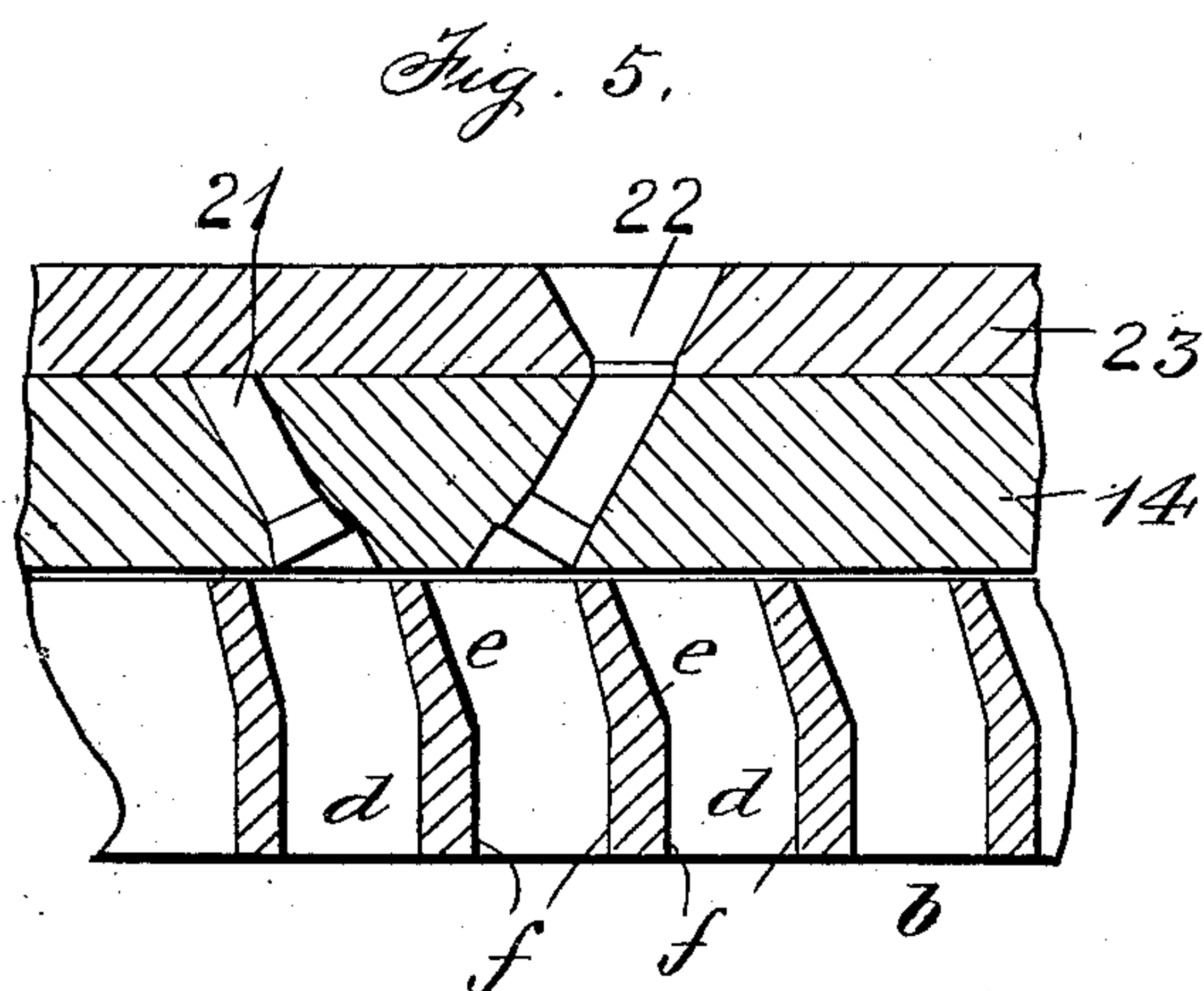


Fig. 6

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UNITED STATES PATENT OFFICE.

LOUIS S. FLATAU, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-THIRD TO JOHN P. GRUET, JR., AND ONE-THIRD TO WALTER M. WARREN, OF ST. LOUIS, MISSOURI.

ROTARY ENGINE.

No. 863,524.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed December 21, 1906. Serial No. 348,934.

To all whom it may concern:

Be it known that I, LOUIS S. FLATAU, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

My invention relates to improvements in rotary engines or motors. Its objects are, among other things, to provide for the ready reversing action of the engine, the outer rotary part or piston being effective for the delivery of the motive fluid or driving power through the said outer part; to greatly simplify the construction and arrangement of the constituent parts of the engine with the view of compactness and adaptability as a motor for sundry purposes.

Said invention consists of certain features or instrumentalities substantially as hereinafter fully disclosed and pointed out by the claims.

In the accompanying drawing illustrating the preferred embodiment of my invention, with the starting lever or throttle relatively disposed and parts broken away—Figure 1 is a longitudinal section of the same. Fig. 2 is an end elevation thereof. Fig. 3 is a vertical section produced through Fig. 1 on the line $x-x$. Fig. 4 is a fractional face view of the vane or chute equipped outer rotary part or piston. Fig. 5 is an enlarged broken detailed sectional view produced upon a horizontal line $a-a$ of Fig. 1. Fig. 6 is a like view taken upon the line $z-z$ of Fig. 4.

In carrying out my invention, I suitably form in two practically semi-spherical members or sections 2, 3, a rotary part or piston 1, which constitutes the outer inclosure or casing differentiating in that respect from the usual way or construction of this class or type of engines or motors. The casing or piston sections 2, 3, are suitably connected or united by what may be termed a rim-member or ring 4 having screw-thread equipped lateral flanges 5, facing inward and engaging screw-threaded surfaces of said piston or casing-sections. The thus formed hollow piston or casing 1 has its sections provided with tubular shaft-extensions or journals 6, 7, the former journal passing through and supported in an upright bearing 8 bolted to a foundation or base 9, the bearing for the latter journal or shaft-extension being later referred to. The bearing or upright 8 is suitably equipped as preferably shown for the proper lubrication of the shaft-extension or journal 6. Said journal or shaft-extension is shown provided with an internal screw-thread for suitably connecting or coupling there-with an additional pipe-section (not shown) carrying or equipped with a driving pulley, the same also pro-

viding for conducting away the exhaust-steam delivered thereinto by the part 6 forming the initial exhaust-outlet, as will be more fully appreciated hereinafter. Said rim or ring member 4 has centrally held thereto and interiorly thereof by countersunk screws a an additional circular or annular member b equipped with a continuous circular series of ports or chutes d . Each port or chute has, as disclosed by Fig. 5, its opposite walls produced upon diagonal or angular lines for a portion of its depth, as at e , and the remaining or delivery portions of said walls formed upon radial or right-lines as at f , in a relatively horizontal plane, thus providing for the impingement of the motive fluid or steam upon such inclined or diagonal surfaces, and the consequent reflex action of the latter as it is discharged out through the right-lined portions of said chutes or ports into the exhaust-chamber of the engine, for the advantageous and effective delivery of said fluid or steam into said chutes or ports, for accordingly driving or rotating the outer rotary piston-member or casing. Also, a semi-spherical fixed member or part 10, having also a tubular extension 11 suitably held by a set or holding screw 12 in a like standard or support 13 as the upright bearing 8, is arranged interiorly of the hollow piston-section 3, being suitably spaced off from the latter for the greater portion of its opposed surface, to reduce frictional contact therebetween, as is obvious. Said inner fixed member or part 10 has fixed to itself, preferably by screw-threaded connection, a head 14, serving as a partition for subdividing the interior chamber, formed by the assemblage of the aforesaid parts, into two lesser chambers or compartments 15, 16, one constituting the steam-chest and the other forming the exhaust-chamber. The tubular extension 11 of the fixed member or part 10, it will be noted, extends through, and forms a bearing for the journal or shaft 7 and has its outer end suitably steam-tight packed by the application thereto of a cap-nut 17, screwed thereon and having fitting interiorly thereof a gland 18 with its inner end fitting into an annular recess 19 of said tubular extension 11. It will be noted that the head or partition 14 has a contracted or less-diametered circular portion 20 extending rearward and adapted to form a closure for the inner or otherwise unguarded bottom-portions of the chutes or ports d in order to aid in giving direction to the discharge of the steam or motive fluid. Said head is also equipped or provided, at equal intervals apart, in outline agreeable with that of its circular outer edge, with two series of what may be termed nozzles or passages 21, 22, preferably six of each, said series extending in diagonally opposite directions as seen in

Fig. 5 for accordingly delivering the steam or motive fluid into the chutes or ports *d*, as in driving the piston to the right or left.

A starting or throttle valve 23, preferably of disk-form in general outline, is arranged in the steam-chest 16 and is seated or faces against the head or partition member 14; a shallow chamber or space 24 being provided between the same, communicating by means of an opening 25 with the steam chest for the admission of steam in behind said valve also, for cushioning or balancing the latter, as will be readily understood. Said valve has a suitable number of, say, quarter-inch openings or ports 26, preferably six, arranged at the requisite intervals apart and for registration with the nozzles or passages 21, 22 as seen in Fig. 5, for delivering the steam or motive fluid from the steam-chest through the latter to the chutes or ports *d* of the rotary or piston member for its actuation, as will be readily appreciated.

In adjusting the valve 23, so as to cause certain of its ports to register with corresponding passages or nozzles 21 or 22 of the fixed inner member, which communicate with opposed chutes *d* of the rotary outer member or piston, the latter may be driven in one direction as for instance to the right. By reversing the adjustment of said valve, certain of its other ports are caused to register with opposed passages or nozzles of the fixed part or member, accordingly delivering into corresponding chutes in the rotary member or piston, thus providing for reversing the motion of the latter causing it to rotate to the left. Said valve has a tubular stem 27 extending interiorly of, and out through the tubular extension 11 of the fixed member 10 to receive the steam or motive-fluid supply, the latter being delivered through ports 28 opening out through said stem, into the steam-chest 16, as will be apparent, especially, from Fig. 1. Said valve has also a rearward-extension 29 forming a further bearing therefor, said extension passing through and being supported in the fixed member 14 and having its projecting nut equipped end encompassed by a preferably helical or coiled spring 30, to automatically hold the valve to its seat.

A suitable starting or throttle lever 31 is applied or connected by a set or holding screw 32 to the valve-stem 29, for requisitely manipulating or adjusting the valve as may be required in starting, stopping and reversing the motion of the engine-piston.

It will be understood that I may employ one, three or five series of chutes or ports; where five series are used two series would be stationary and adjunctive of the fixed member while the other three series would be supplied to the rotary outer member; where three series are used one series would be of the fixed member and two of the rotary member; and where but one series is employed the fixed member would not have any and the rotary member would have but one. The fixed chute equipped-wheels would have their chutes milled or produced at a different angle from the rotary chute

equipped members or wheels, to provide for delivering the steam or motive fluid from a fixed member to a rotary member or piston.

I claim—

1. An engine or motor of the character described, comprising a rotary outer member or piston equipped with an inner series of chutes or ports, a fixed member having a number of diagonal passages or nozzles, and a valve-member having a number of ports registering with said passages or nozzles, said nozzles being arranged for delivery into said chutes.

2. An engine or motor of the character described, comprising a rotary outer member or piston provided with an inner series of chutes angular or inclined for a portion of their depth and radial or right-lined for the remaining portion of their depths, a fixed member having a number of passages or nozzles effective for registration with said chutes and a valve-member provided with a number of ports for delivering into said nozzles or passages.

3. An engine or motor of the character described, comprising a rotary outer piston having an exhaust-chamber, and centrally equipped upon its inner surface with a circular series of chutes, a fixed inner member adapted to form the steam chest, and a disk-valve effective to deliver via its stem, the steam or motive-fluid into said steam-chest, said fixed member being provided with passages or nozzles registering with said chutes and said valve having ports delivering into said nozzles.

4. An engine or motor of the character described, comprising a rotary outer hollow piston having an exhaust chamber provided with an exhaust tubular extension, said piston being equipped with a circular series of inner chutes delivering into said exhaust-chamber, a fixed member forming a steam-chest and having its head or partition forming portion provided with diagonally arranged nozzles or passages effective to deliver into said chutes, and a disk-form of valve provided with a number of ports adapted to register with said nozzles and communicating with said steam-chest, said valve also having a ported tubular stem adapted to deliver the steam or motive-fluid through its ports into said steam-chest.

5. An engine of the character described, comprising a rotary piston embracing two hollow semi-spherical members, with a central uniting rim provided with an inner circular series of chutes, a hollow semi-spherical fixed member adapted to form the steam-chest and having a number of diagonal nozzles or passages registering with said chutes and a disk-form of throttle-valve equipped with a number of ports effective to deliver the steam or motive-fluid from said steam-chest via said nozzles into said chutes.

6. An engine or motor of the character described, comprising a rotary outer hollow member equipped about centrally with an inner circular series of chutes, a fixed inner hollow member provided with two series of oppositely extending diagonal nozzles or passages for the delivery of the steam or motive fluid into said chutes, and a disk-form of valve having oppositely delivering ports for registration with said oppositely extending nozzles, said inner fixed member forming the steam-chest and said valve having a ported hollow stem adapted to supply the steam or motive fluid to said steam-chest.

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

LOUIS S. FLATAU.

Witnesses:

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T. J. HURLEY.