No. 626,206. Patented May 30, 1899.

W. JASPER.

EXPLOSIVE MOTOR.

(Application filed Apr. 19, 1898.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

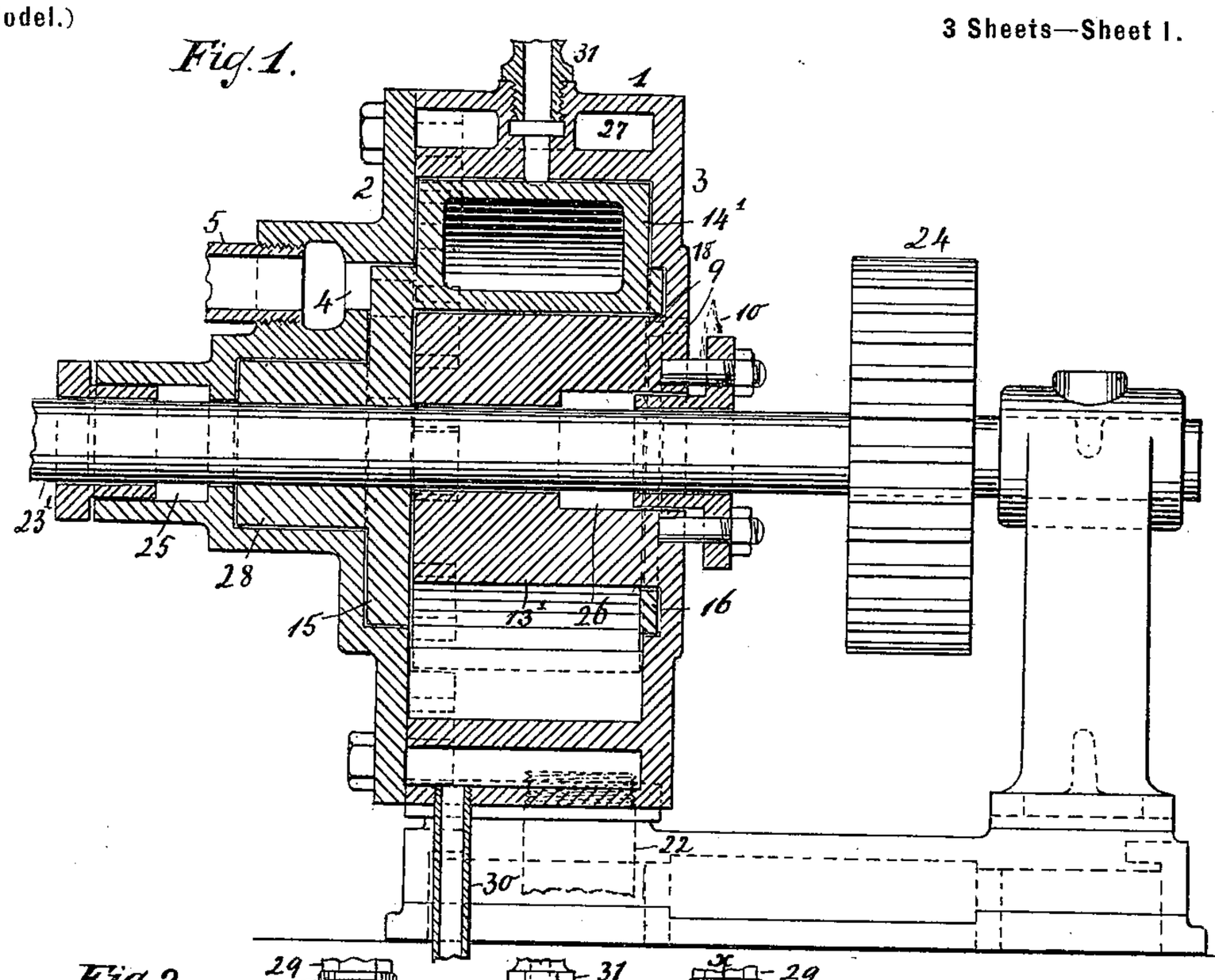

Fig. 2.

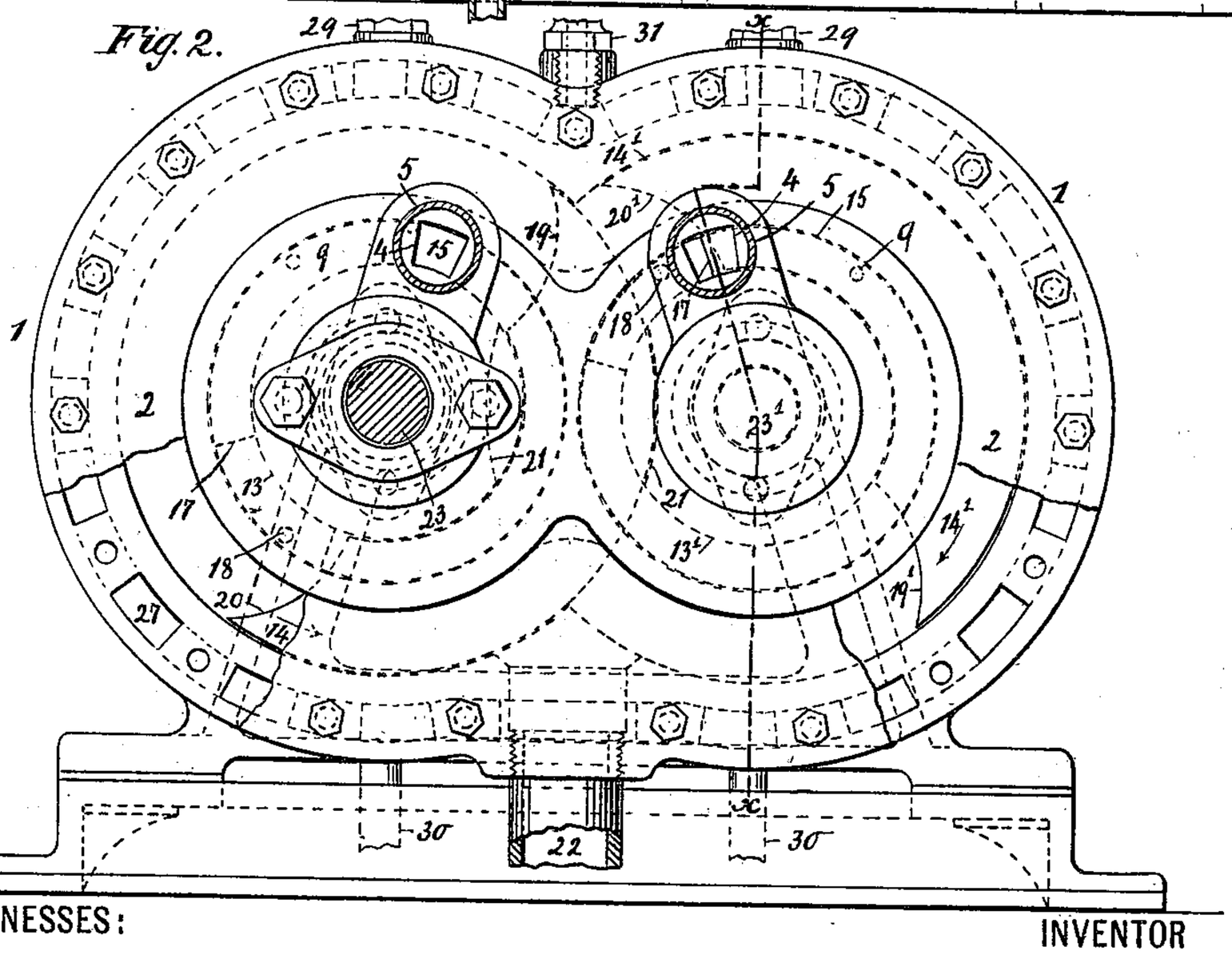

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Fig. 3.

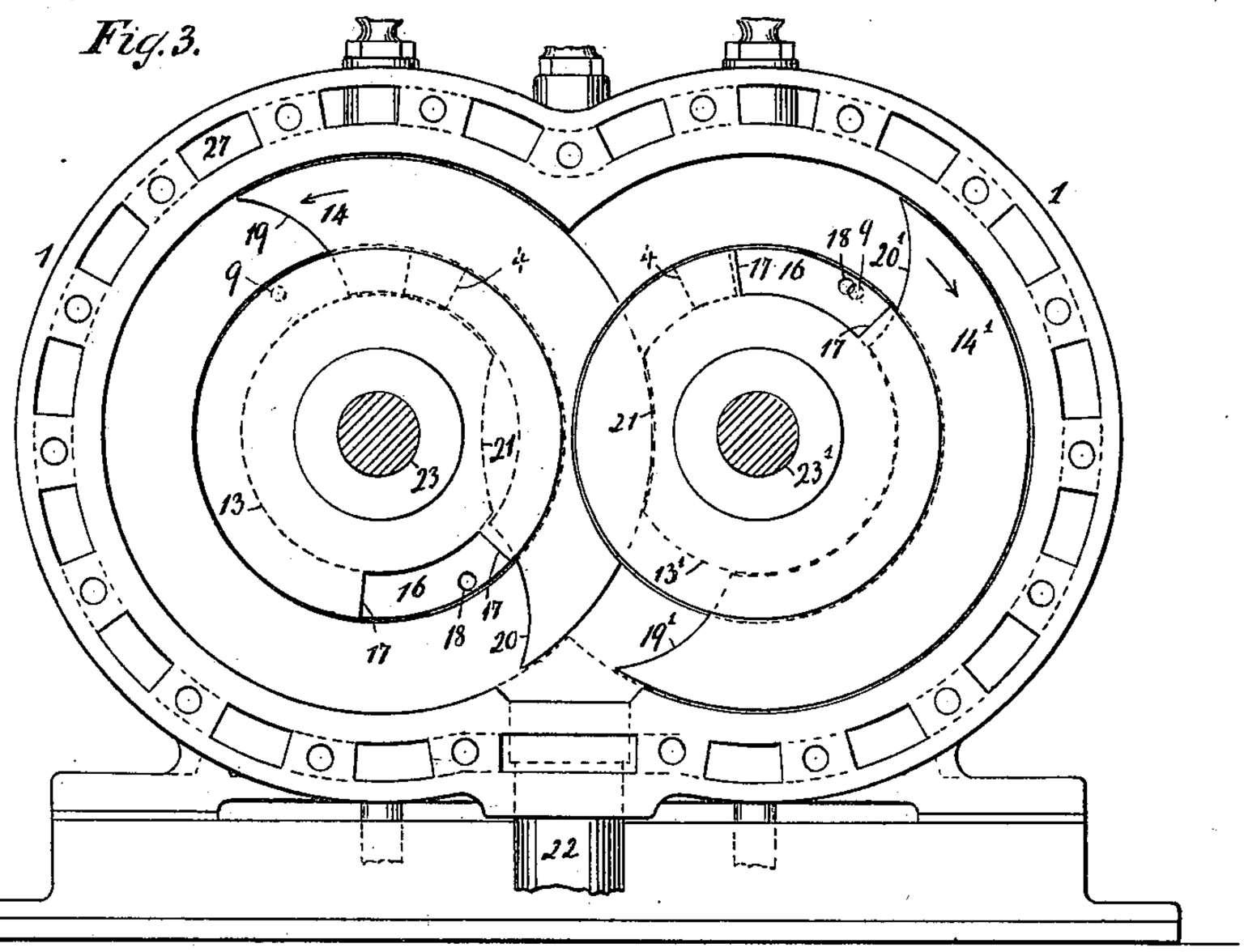
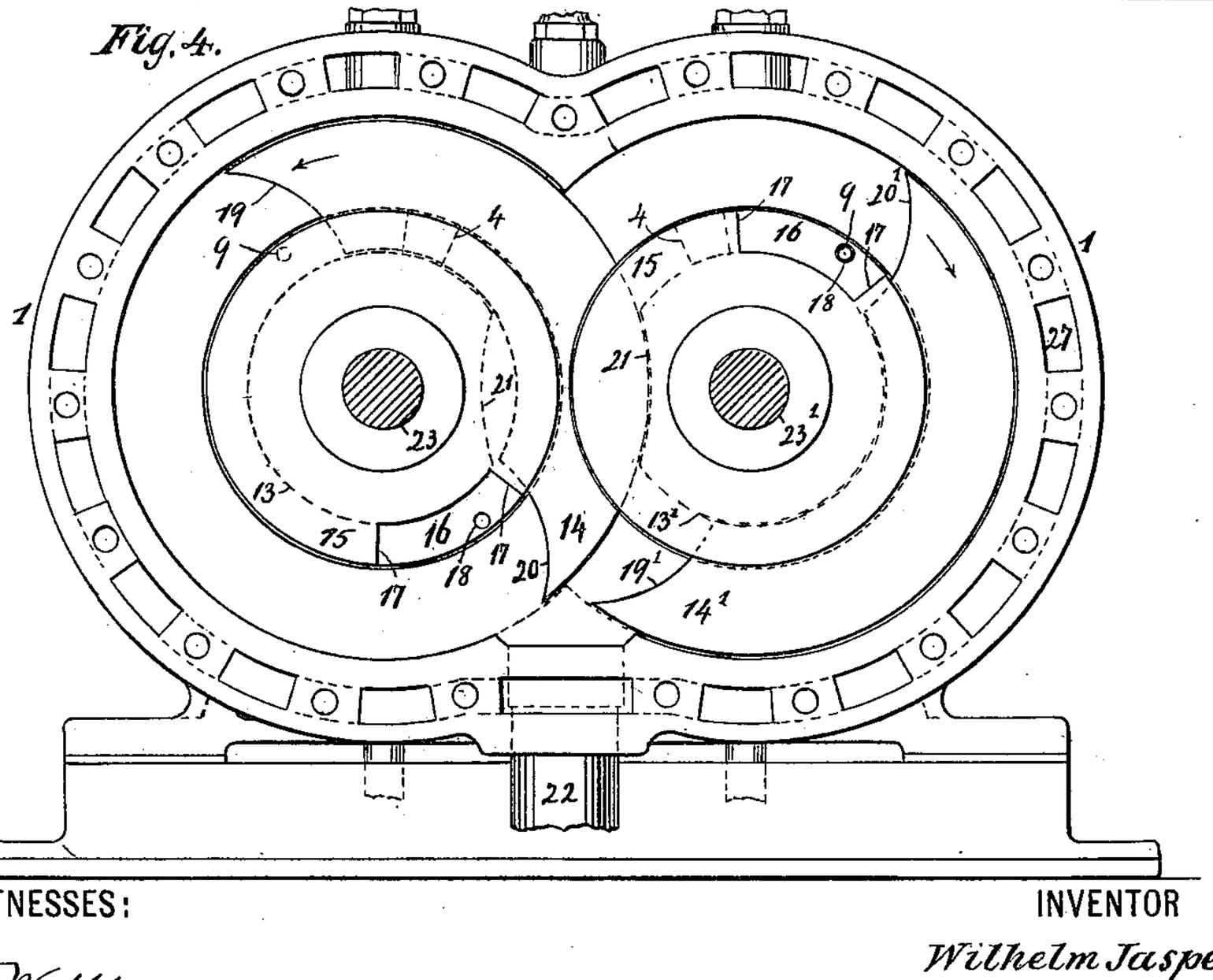


Fig. 4.



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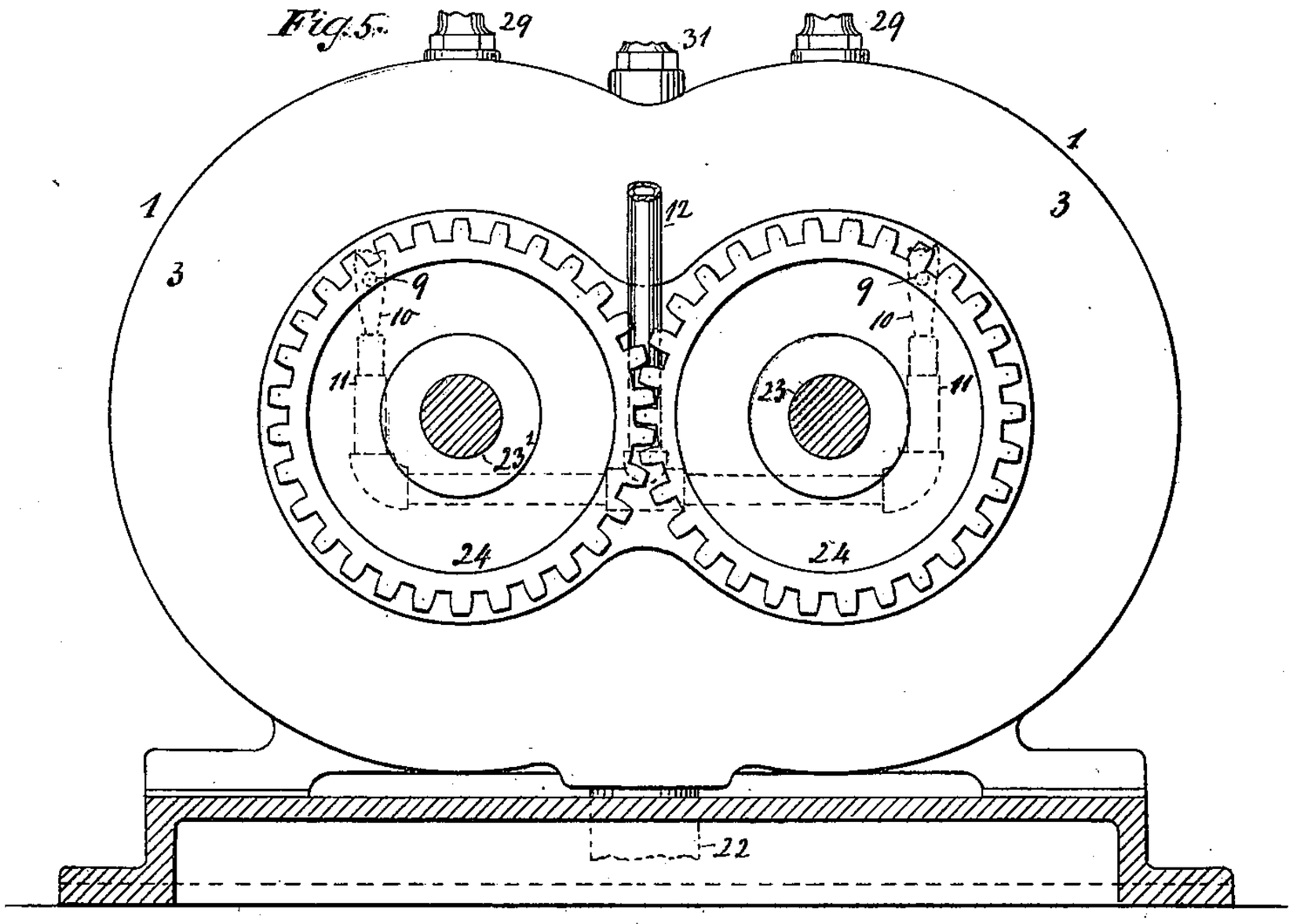
(Application filed Apr. 19, 1898.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 5.



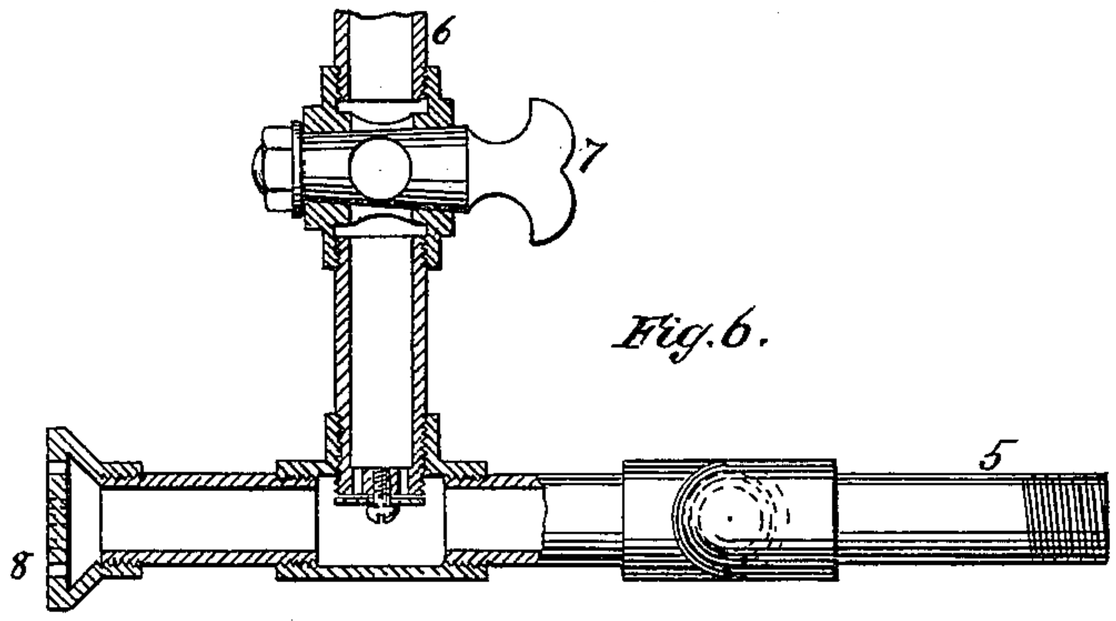
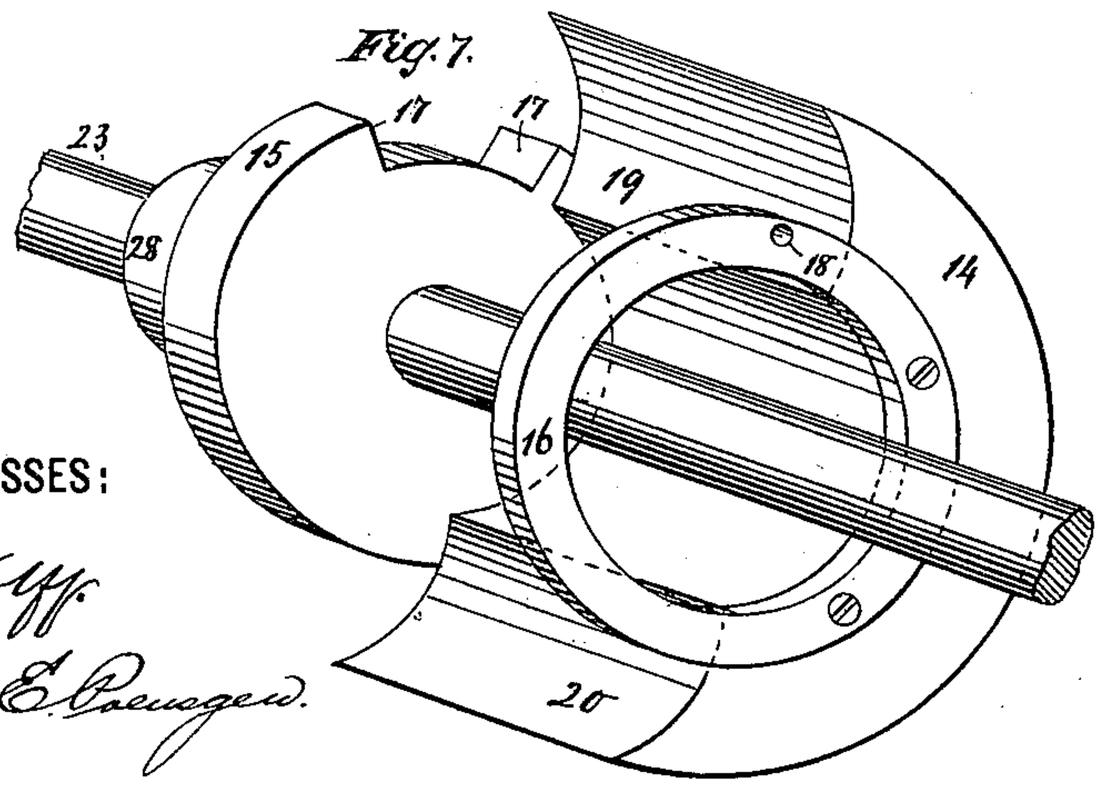


Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

WILHELM JASPER, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO MAX MINDHEIM, OF SAME PLACE.

EXPLOSIVE-MOTOR.

SPECIFICATION forming part of Letters Patent No. 626,206, dated May 30, 1899.

Application filed April 19, 1898. Serial No. 678,165. (No model.)

To all whom it may concern:

Be it known that I, WILHELM JASPER, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Explosive-Motors, of which the following is a specification.

By means of this invention a motor is obtained which is easy and reliable in its operation, as set forth in the following specification and claims and illustrated in the annexed drawings, in which—

Figure 1 is a section of the motor along *x x*, Fig. 2. Fig. 2 is a side elevation of Fig. 1. Fig. 3 is a view like Fig. 2, with one of the cylinder-heads removed and parts in a different position than in Fig. 2. Fig. 4 is a view like Fig. 3, with parts in a different position than in Fig. 3. Fig. 5 is a side elevation taken from the side opposite to that exposed in Fig. 2. Fig. 6 is a detail view of a feed for explosive or pressure producing medium. Fig. 7 is a detail view of a piston.

A cylinder is shown at 1. This cylinder is adapted for the reception of two pistons, as will presently appear. It might be considered a double cylinder. This cylinder is shown with the heads 2 and 3. The head 3 might be practically cast or formed integral with the cylinder or side. The head 2 is shown bolted or removable. The head 2 is shown with inlets or feeds 4. Suitable gas or combustible is led to the feeds 4 by pipes 5, having communication 6, Fig. 6, with a suitable tank or supply. (Not shown.) By opening the valve 7 the combustible suitably mixed with air entering at 8 to form an explosive mixture can pass to feeds 4. The head 3 has ignition-inlets 9. The feeds 4 and inlets 9, as seen, are located at opposite sides or heads of the cylinder. A suitable flame or igniter 10, Fig. 5, is maintained at each ignition-inlet 9 by burners 11 and supply or gas pipe 12. The cylinder has hubs 13 and 13′. These hubs are practically cast with or secured to head 3 and extend into the cylinder. Pistons 14 and 14′ are made to rotate about the hubs. Each piston has covers 15 and 16. The covers 15 are for closing the feeds 4. The covers 16 are for closing the inlets 9. The covers 16, sitting or rotating about hubs 13 and 13′, are ring-shaped or annular. The covers 15 are each apertured or cut away, as seen at 17, and the covers 16 are perforated or apertured, as seen at 18. As a cylinder with the covers 15 and 16 rotates the perforation or opening 17, passing by feed 4, temporarily opens the latter to allow combustible to enter the cylinder. The cover 15 then closes feed 4, and the opening or perforation 18 then coming to register with perforation 9 the flame 10, entering the cylinder or igniting the combustible therein, causes an explosion or pressure for actuating or maintaining the rotation of the pistons. A piston and its covers 15 and 16 being cast or firmly secured together will form a strong or durable structure, and the covers 15 and 16 when suitably guided or seated in heads 2 and 3 will serve to steady the piston. The pistons are cut away or mutilated, the edges of the cuts being shown at 19 and 20 and at 19′ and 20′. These cuts form chambers or spaces at the apertures or perforations 17 and 18, and into the spaces or passages thus formed the combustible and flame from inlets or pressure-passages 4 and 9 can enter. The main part or unmutilated portion of each piston is made to extend to or fitted into the opposite hub. In the position shown in Fig. 4 the piston 14 fits or extends into a recess or concave 21 in hub 13′. The hub 13 has a similar depression 21 for the piston 14′ to rotate in. Starting at the position shown in Fig. 2 the piston 14′ is bringing the opening 17 of its cover 15 to register with the corresponding feed 4, so that combustible can enter the space formed by the cylinder wall and heads and by the piston-face 20′ and body or full part of piston 14. Coming to the position shown in Fig. 3, the piston 14′ has closed the adjacent feed 4, so that no escape can occur therethrough. At the same time the body or convex part of piston 14, working or fitting into seat 21 of hub 13′, closes or prevents escape at the opening or exhaust 22. The perforation 18 of piston 14′ being carried to the adjacent ignition-opening 9, Fig. 4, the combustible is ignited, and the explosion or pressure, acting against face 20′, rotates the piston 14′ and of course

also piston 14, the pistons being geared together, as presently shown. The explosion or pressure also acts against the body of piston 14, above its center, so as to tend to rotate this piston 14 in the desired direction; but of course the face or cut 20′ offers the best face or point for this pressure to act on. The direction of rotation of the pistons is shown by arrows, and as the edge 20′ comes to exhaust 22 the pressure which has just done its work can escape. Of course as the pistons continue to rotate the pressure next generated acts against face 20 to escape in its turn as this face 20 comes to the exhaust 22.

It may be noted that for elucidation the positions of the feeds 4 are indicated by dotted lines in Figs. 3 and 4. As a matter of fact, the head 2, provided with these perforations or feeds 4, has been removed in these figures. In Fig. 2 this head 2 is shown partly broken away.

Rotary shafts 23 and 23′ are shown extended through the heads 2 and 3 and through the hubs 13 and 13′. These shafts are connected or geared together, as seen at 24, Fig. 5. Each piston has its cover 15 keyed or fixed to its respective shaft, and as each piston is fixed to or cast with or between its covers 15 and 16 the shafts 23 and 23′, with pistons 14 and 14′ and covers 15 and 16, all rotate together. The head 2, by suitable stuffing-boxes 25, Fig. 1, can provide tight bearing for the shafts 23 and 23′, and the hubs 13 and 13′ can likewise have stuffing-boxes 26.

The cylinder-wall 1 can be formed double or with channels 27 for the passage of water or cooling medium circulating by pipes 29 and 30. The covers 15 are shown with what may be called "hub portions" 28, Figs. 1 and 7, seated about or extended some distance along the shafts 23 and 23′. A fly-wheel (not shown) can be applied, as seen fit, and the power or rotation generated can be utilized as seen fit—for example, in propelling or pumping. Oil or lubricant can be passed into the cylinder or to pistons by openings or cups 31.

The device, being automatic or by its action opening and closing the ports, is simple in construction and reliable in operation.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a rotary engine, the combination with the casing comprising two intersecting cylinders each provided with a feed-port and an ignition-inlet, of oppositely-rotatable piston-segments arranged in said cylinders and each provided at its opposite ends with annular covers arranged to close the feed-ports and ignition-inlets, one of said covers on each piston being provided with a recess constructed to register with the corresponding feed-port to admit gas to the cylinder, and the opposite cover being provided with an aperture constructed to register with the ignition-inlet to ignite the gas in the cylinder, the arrangement being such that the explosions alternately occur in each of the cylinders, substantially as described.

2. In a rotary engine, the combination with the casing comprising two intersecting cylinders each provided with a feed-port and an ignition-inlet, and an exhaust-port common to both of said cylinders, of oppositely-rotatable piston-segments arranged in said cylinders and each provided at its opposite ends with annular covers arranged to close the feed-ports and ignition-inlets, one of said covers on each piston being provided with a recess constructed to register with the corresponding feed-port to admit gas to the cylinder, and the opposite cover being provided with an aperture constructed to register with the ignition-inlet to ignite the gas in the cylinder, substantially as described and for the purpose specified.

3. In a rotary engine, the combination with the casing comprising two intersecting cylinders each provided with a feed-port and an ignition-inlet, and having an exhaust, of oppositely-rotatable piston-segments arranged in said cylinders and each provided at its opposite ends with annular covers arranged to close the feed-ports and ignition-inlets, one of said covers on each piston being provided with a recess constructed to register with the corresponding feed-port to admit gas to the cylinder, and the opposite cover being provided with an aperture constructed to register with the ignition-inlet, and igniters arranged outside the cylinders in proximity to the ignition-inlets, substantially as described and for the purpose specified.

4. In a rotary engine, the combination with the casing comprising two intersecting cylinders each provided with a feed-port and an ignition-inlet, the feed-port and ignition-inlet being arranged in the opposite ends of each cylinder, of rotatable piston-segments arranged in said cylinders and geared together to rotate in opposite directions, each of said piston-segments being provided at its opposite ends with annular covers arranged to close the feed-ports and ignition-inlets, one of said covers on each piston being provided with a recess constructed to register with the corresponding feed-port to admit gas to the cylinder, and the opposite cover being provided with an aperture constructed to register with the ignition-inlet to ignite the gas in the cylinder, the arrangement being such that as one piston is being propelled by an exploded charge of gas the other piston is discharging the previously-exploded gas from its cylinder, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILHELM JASPER.

Witnesses:
HENRY J. BEHRENS,
CHAS. E. POENSGEN.