

No. 688,619.

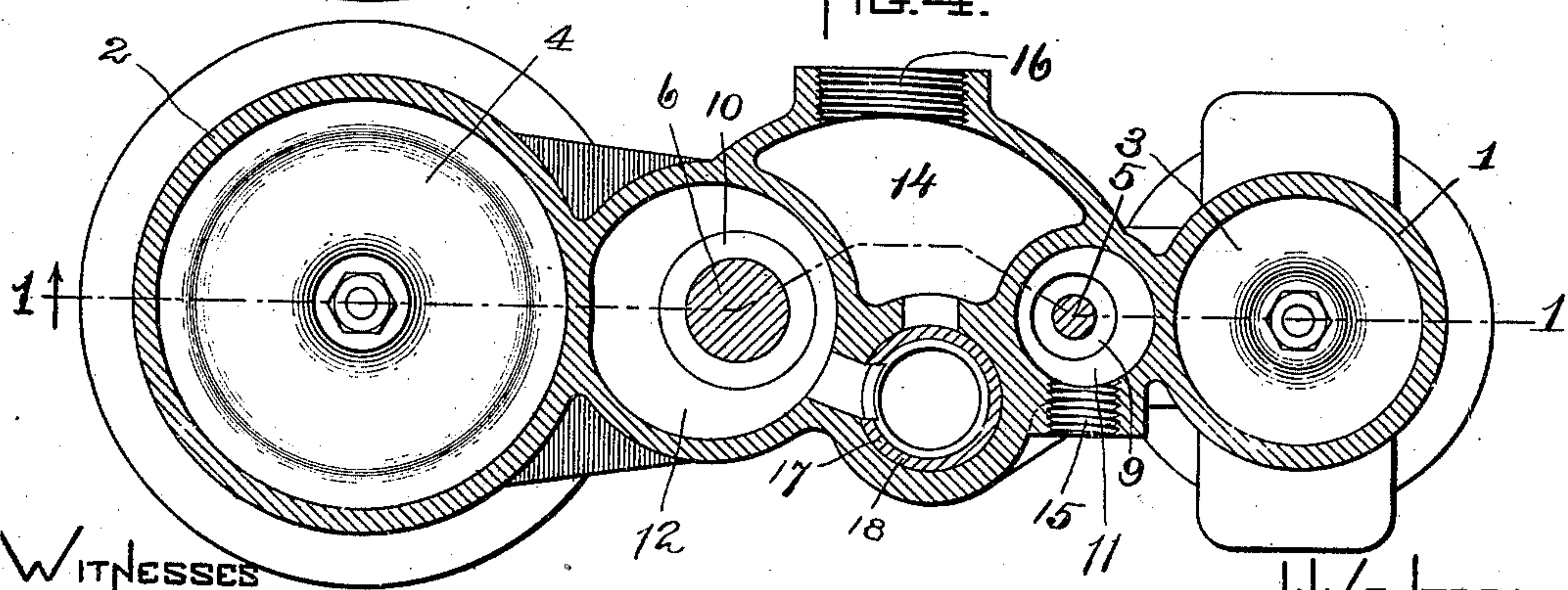
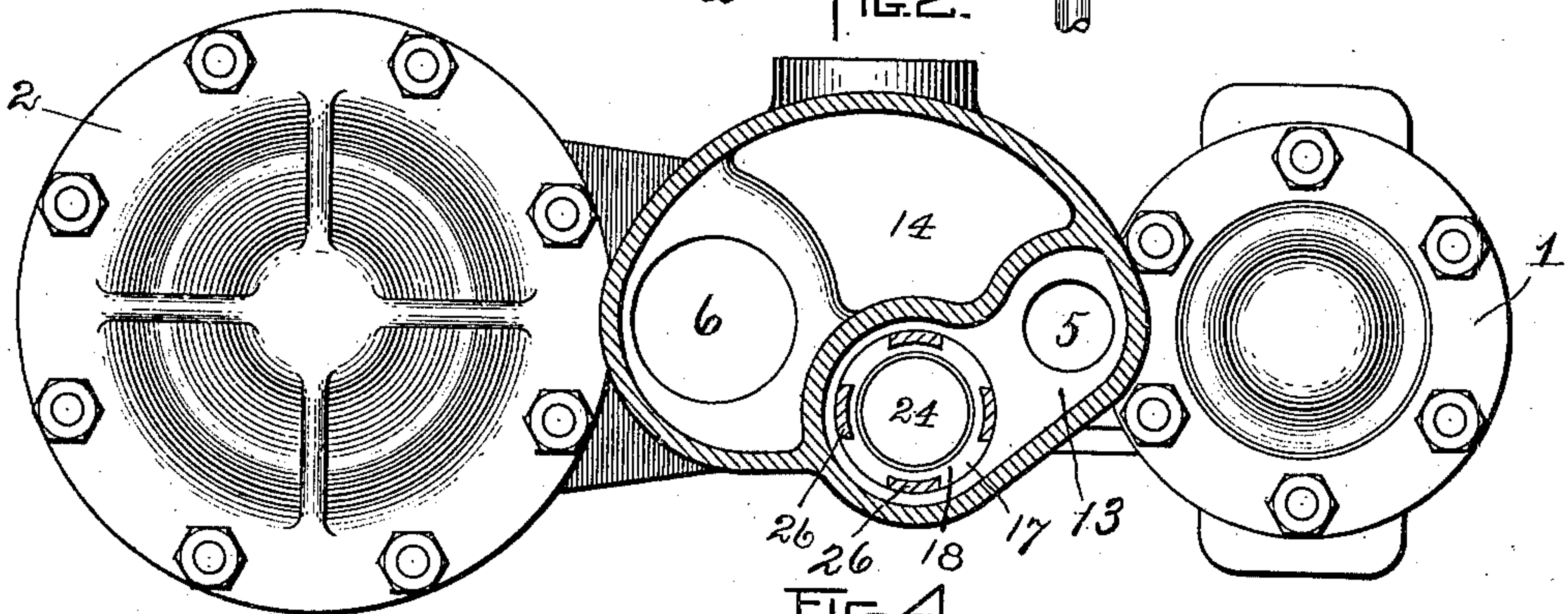
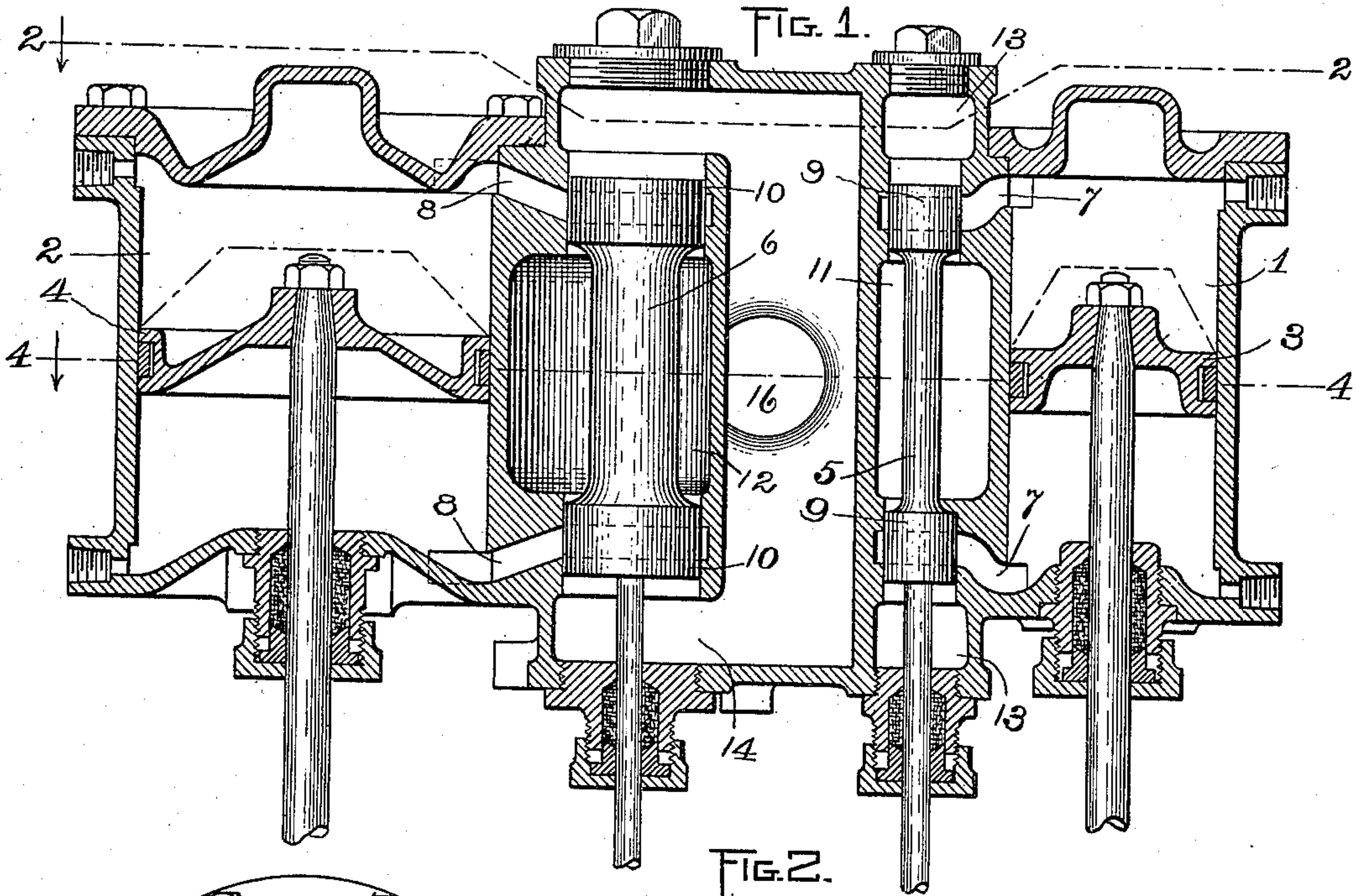
Patented Dec. 10, 1901.

T. F. FLINN.
COMPOUND ENGINE.

(Application filed Jan. 12, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES
P. H. Pezzetti
C. C. Stecher

INVENTOR:
Thomas F. Flinn
by Wright, Porter & Smith
Attys.

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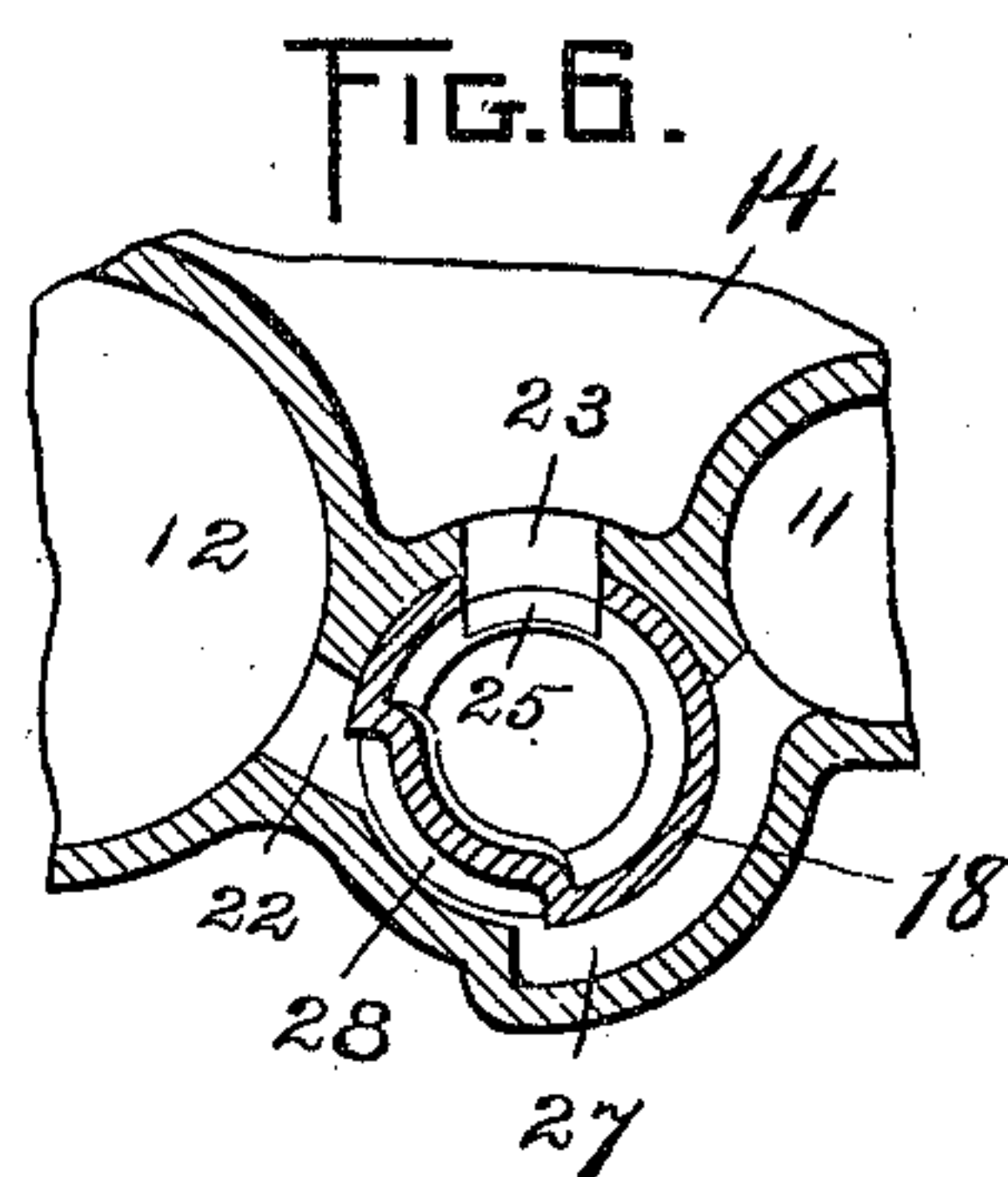
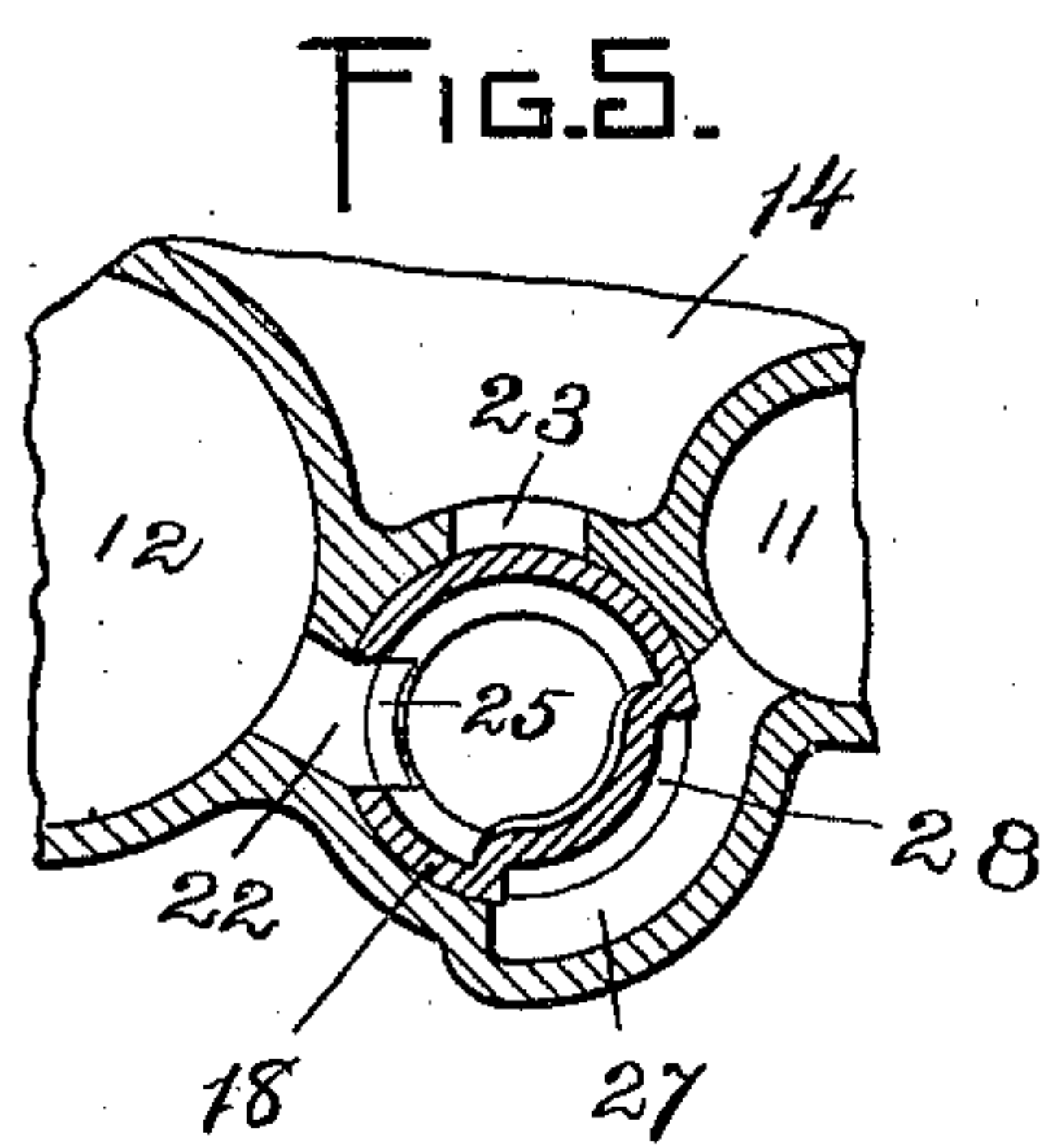
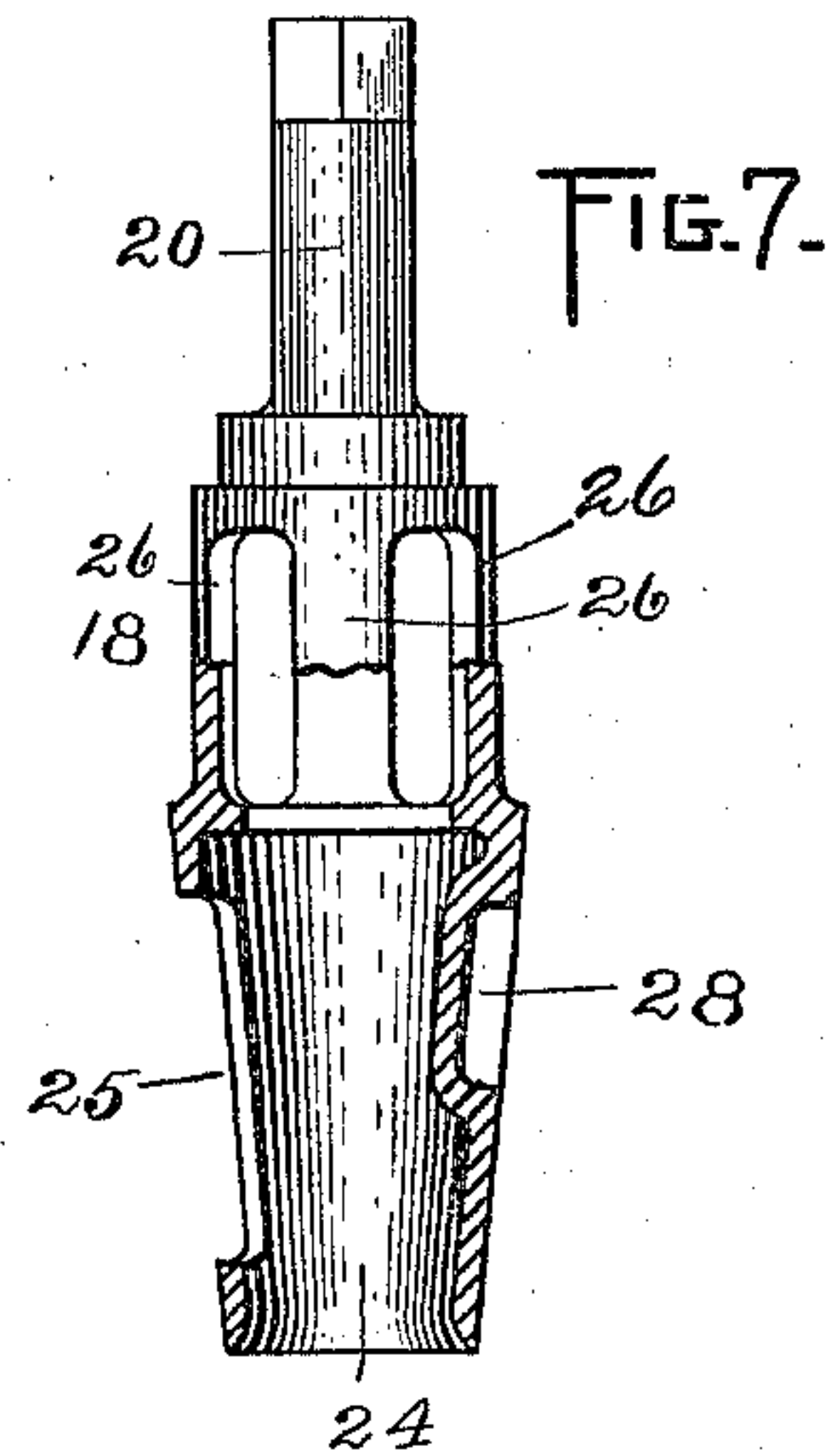
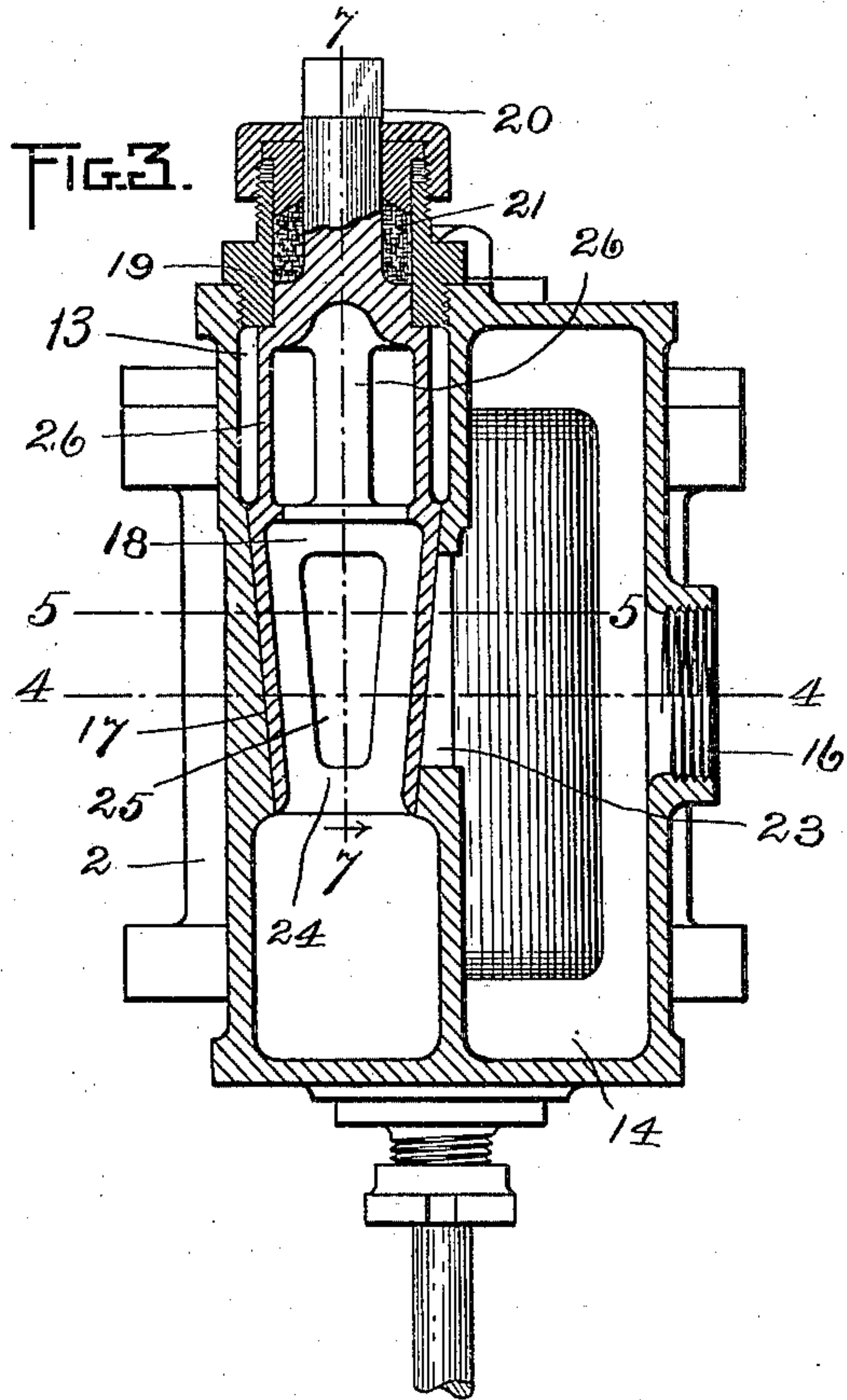
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(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

P. M. Perzetti.
C. C. Stecker.

INVENTOR:

Thomas F. Flinn
by Wright, Brown & Lundy
Atty.

UNITED STATES PATENT OFFICE.

THOMAS F. FLINN, OF BROOKLYN, NEW YORK.

COMPOUND ENGINE.

SPECIFICATION forming part of Letters Patent No. 688,619, dated December 10, 1901.

Application filed January 12, 1901. Serial No. 43,011. (No model.)

To all whom it may concern:

Be it known that I, THOMAS F. FLINN, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Compound Engines, of which the following is a specification.

This invention relates to compound steam-engines employing an intercepting-valve under control of an operator, whereby the engine can either be run on the compound system, with the high-pressure cylinder exhausting into the low-pressure cylinder, or the cylinders can be operated singly with independent admission and exhaust for starting or running slowly.

The object of the invention is to provide an engine of the described character in which the parts concerned in the intercepting or interchanging operation are of simple and durable construction and little liable to derangement.

The invention consists in the novel features of construction and arrangement which I shall now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a longitudinal vertical section of an engine constructed in accordance with my invention, said figure being a view taken on the line 1 1 of Fig. 4. Fig. 2 represents a section on the line 2 2 of Fig. 1. Fig. 3 represents a section on the line 3 3 of Fig. 2. Fig. 4 represents a section on the lines 4 4 of Figs. 1 and 3. Figs. 5 and 6 represent a section on the line 5 5 of Fig. 3, showing the intercepting-valve in its two positions. Fig. 7 represents a section of the valve on the line 7 7 of Fig. 3.

The same reference characters indicate the same parts in all of the figures.

Referring to the drawings, 1 2 represent the high and low pressure cylinders of a double-acting compound steam-engine. 3 4 represent the pistons in said cylinders, and 5 6 represent balanced piston-valves controlling admission and exhaust of steam to and from said cylinders. The guides or chambers for the valves are located between the two cylinders and are connected by ports or passages 7 8 with the two ends of the respective cylinders. The valves 5 6 have pistons 9 9 10 10, adapted to alternately cover and uncover the ports 7 8 on both sides during the movements

of the valves. The admission of steam to each cylinder is from an inlet-chamber 11 or 12, located between the pistons 9 9 or 10 10, and the exhaust is beyond or over the ends of said pistons, the high-pressure cylinder 1 exhausting into two chambers 13 13 at the ends of its valve-guide, and the low-pressure cylinder exhausting over the ends of the valve 6 into a large exhaust-chamber 14. Live steam is supplied to the high-pressure inlet-chamber 11 through a pipe fitted to a tapped inlet-aperture 15 in the wall of said chamber. The final exhaust is through a pipe fitted to a tapped exhaust-aperture 16 in the wall of the exhaust-chamber 14.

17 is an intercepting-valve chamber or socket located between the two slide-valve guides and open at its upper and lower ends to the high-pressure exhaust-chambers 13 13. The walls of said intercepting-valve chamber are ground to a taper, and in the chamber is fitted a tapered rotary-plug intercepting-valve 18, retained in place by a nut 19 and having a stem 20, which passes through a stuffing-box 21 and is adapted to be connected with suitable operating means, whereby the attendant or engineer can rotate the valve in its socket. In the wall of the chamber or socket 17 are formed two ports 22 23, the former connecting with the low-pressure inlet-chamber 12 and the latter with the low-pressure exhaust-chamber 14. The valve 18 is a hollow shell whose interior chamber or passage 24 is continually open to the high-pressure exhaust-chambers 13 13, and in the wall of the valve is a port 25, adapted to register with either of the ports 22 23. The body of the valve 18 is connected with the stem 20 by means of arms 26 26, between which are spaces which permit the steam to pass freely from the upper exhaust-chamber 13 to the interior of the valve.

27, Figs. 5 and 6, is a port extending from the high-pressure inlet-chamber 11 to the valve socket or chamber 17, and 28 is a peripheral port or passage formed in the side of the valve 18 and adapted to connect the passage 27 with port 22 when the valve-port 25 is in registry with the port 23, as shown in Fig. 6, but located in an inoperative position when the valve-port 25 registers with port 22.

The operation is as follows: In starting the engine or sometimes in running slow the in-

intercepting-valve 18 will be turned by the operator to the position shown in Fig. 6, in which live steam is supplied to the inlet-chambers 11 12 of both the high and low pressure cylinders and both cylinders exhaust into the chamber 14. As soon as the engine has gathered speed the valve 18 is turned through an angle of ninety degrees to the position represented in Fig. 5, and the engine then runs compound, the high-pressure exhaust being carried through the intercepting-valve to the low-pressure inlet-chamber 12 and the ports 22 27 shut off.

I claim—

15 In a compound engine, the combination with the high and low pressure cylinders and the balanced piston slide-valves controlling the admission and exhaust of steam to and from said cylinders, of inlet-chambers between the ends of said valves, exhaust-chambers beyond the ends of said valves, an inter-

cepting-valve chamber open at both ends to the high-pressure exhaust-chambers, and having ports in its walls connecting with the high and low pressure inlet-chambers and the low-pressure exhaust-chamber, and a rotary hollow-plug intercepting-valve in said intercepting-valve chamber open at both ends and having a port connecting with its interior and adapted to register with either the low-pressure inlet-port or the low-pressure exhaust-port, and a passage adapted to connect the high and low pressure inlet-ports when the said valve-port registers with the low-pressure exhaust-port.

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

THOMAS F. FLINN.

Witnesses:

JOSEPH B. HICKEY,
JAMES J. HICKEY.