

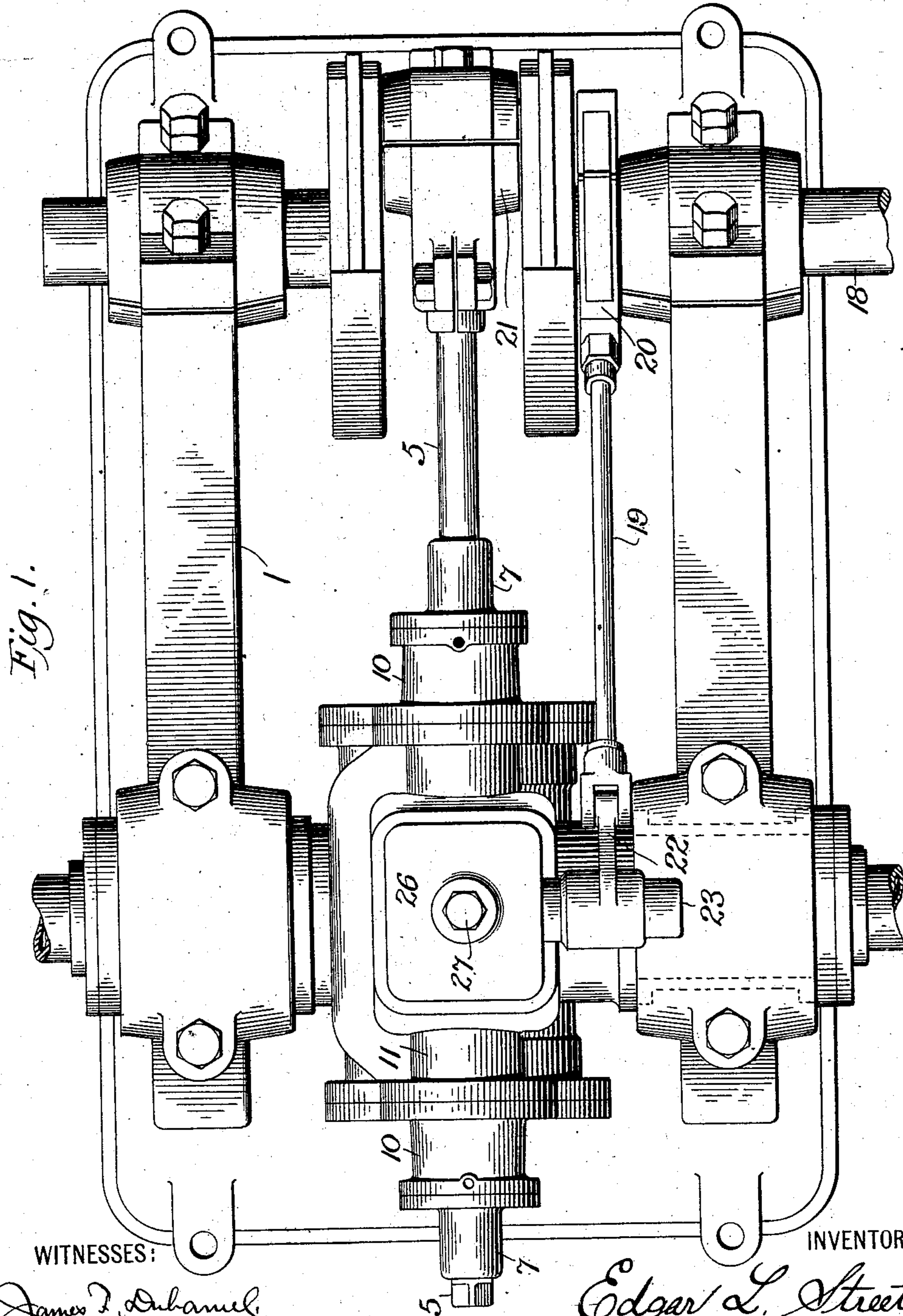
No. 726,110.

PATENTED APR. 21, 1903.

E. L. STREET.
OSCILLATING STEAM ENGINE.
APPLICATION FILED SEPT. 8, 1902.

NO MODEL.

5 SHEETS—SHEET 1.



WITNESSES:

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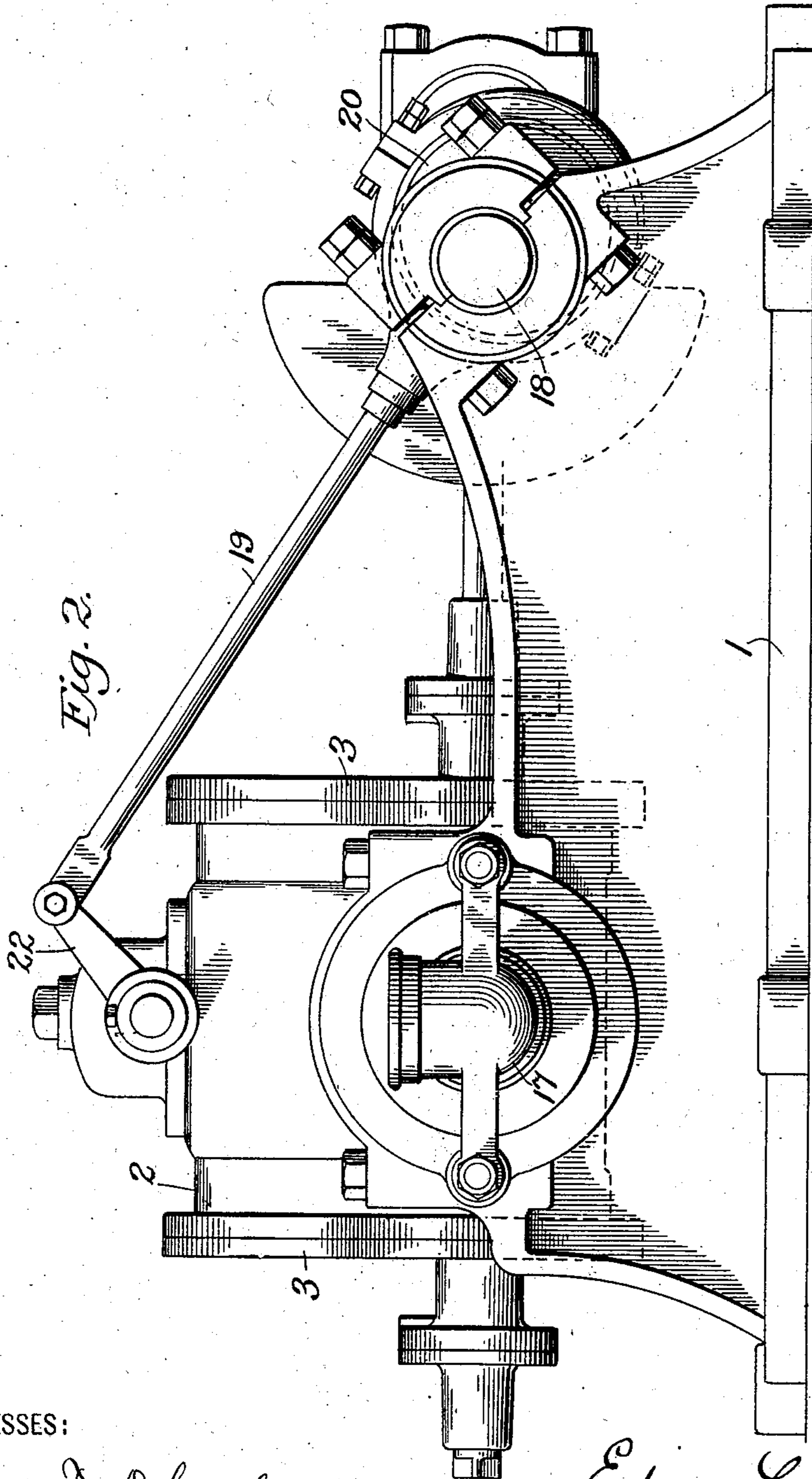
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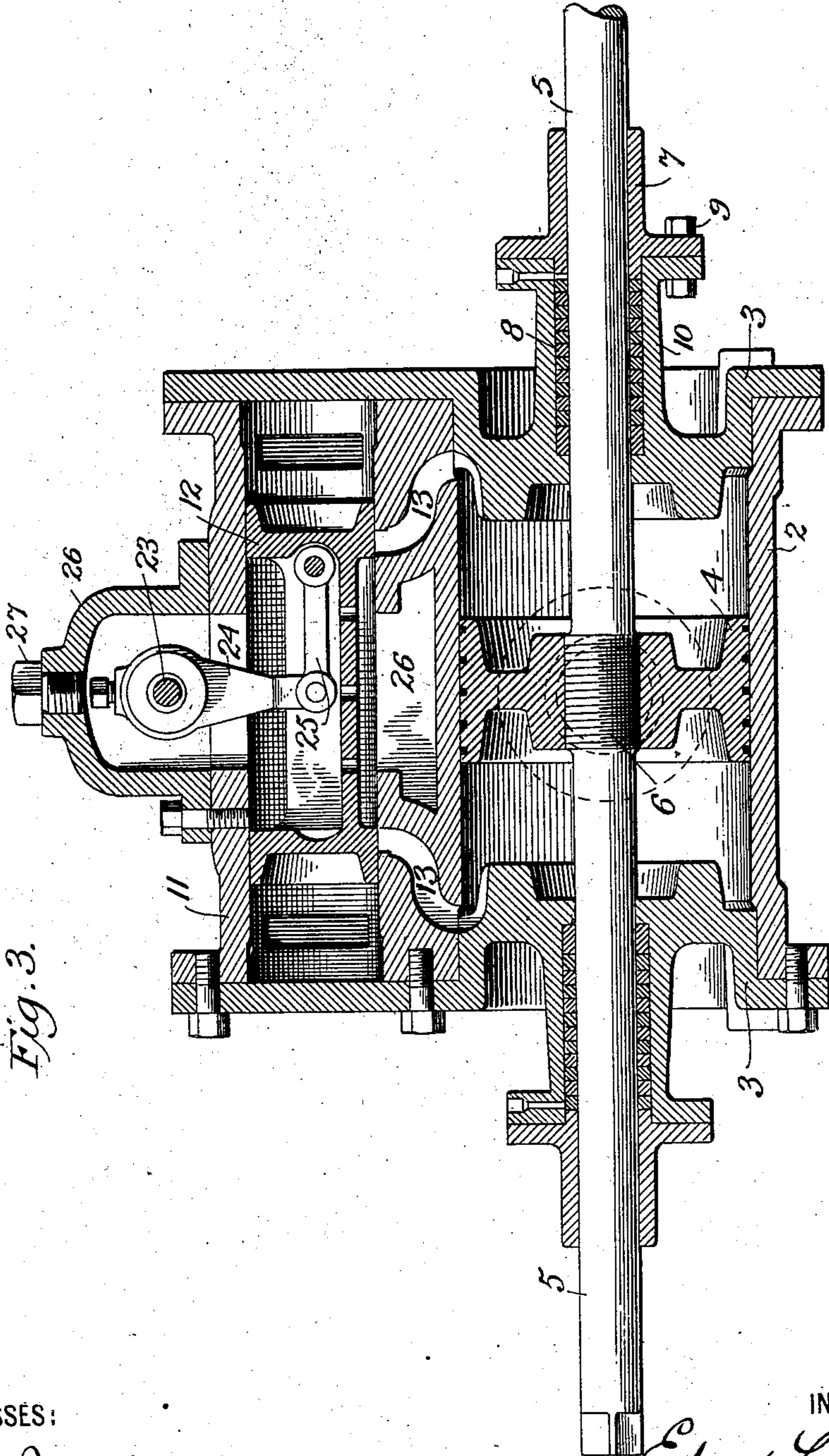


Fig. 3.

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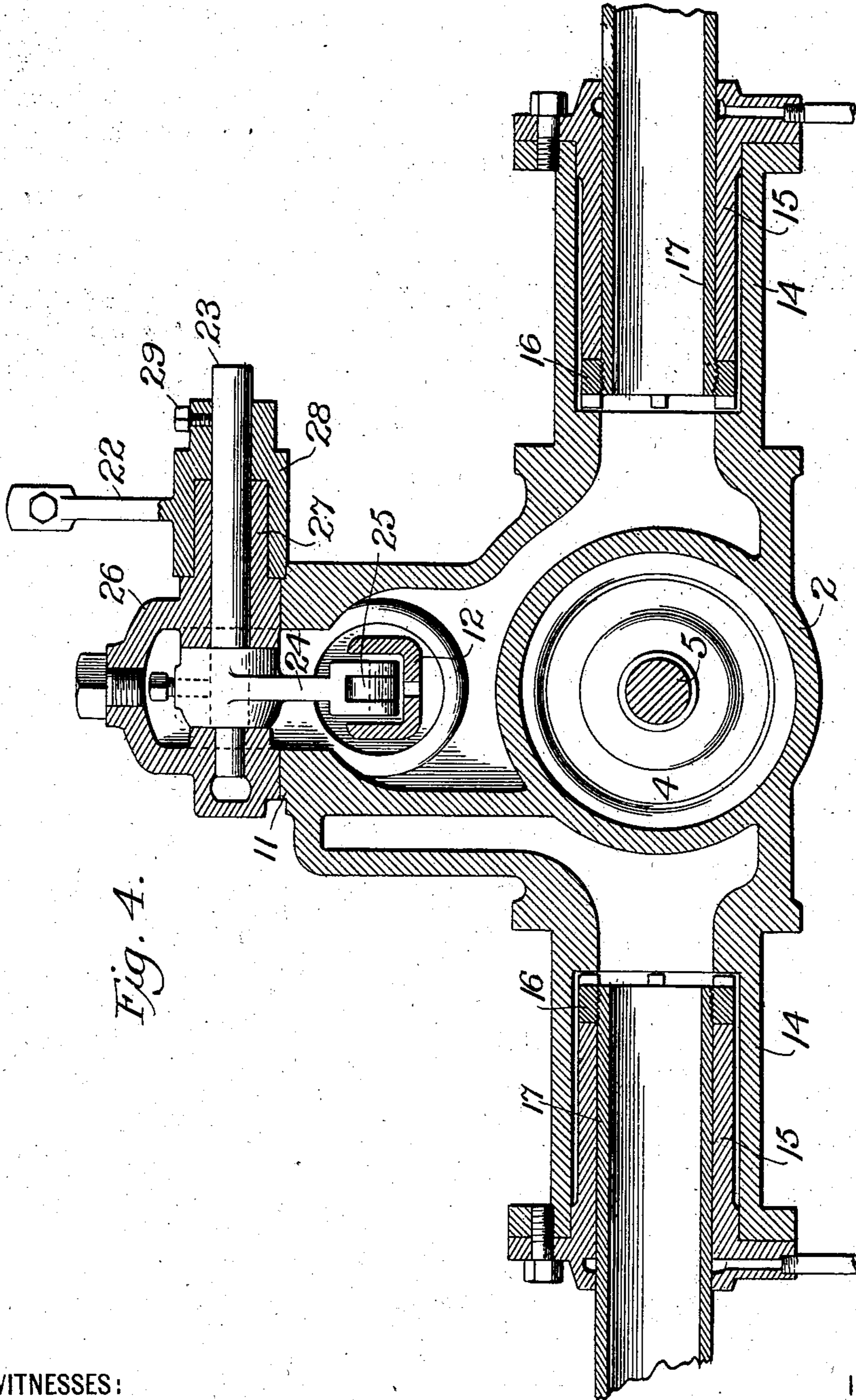


Fig. 4.

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5 SHEETS—SHEET 5.

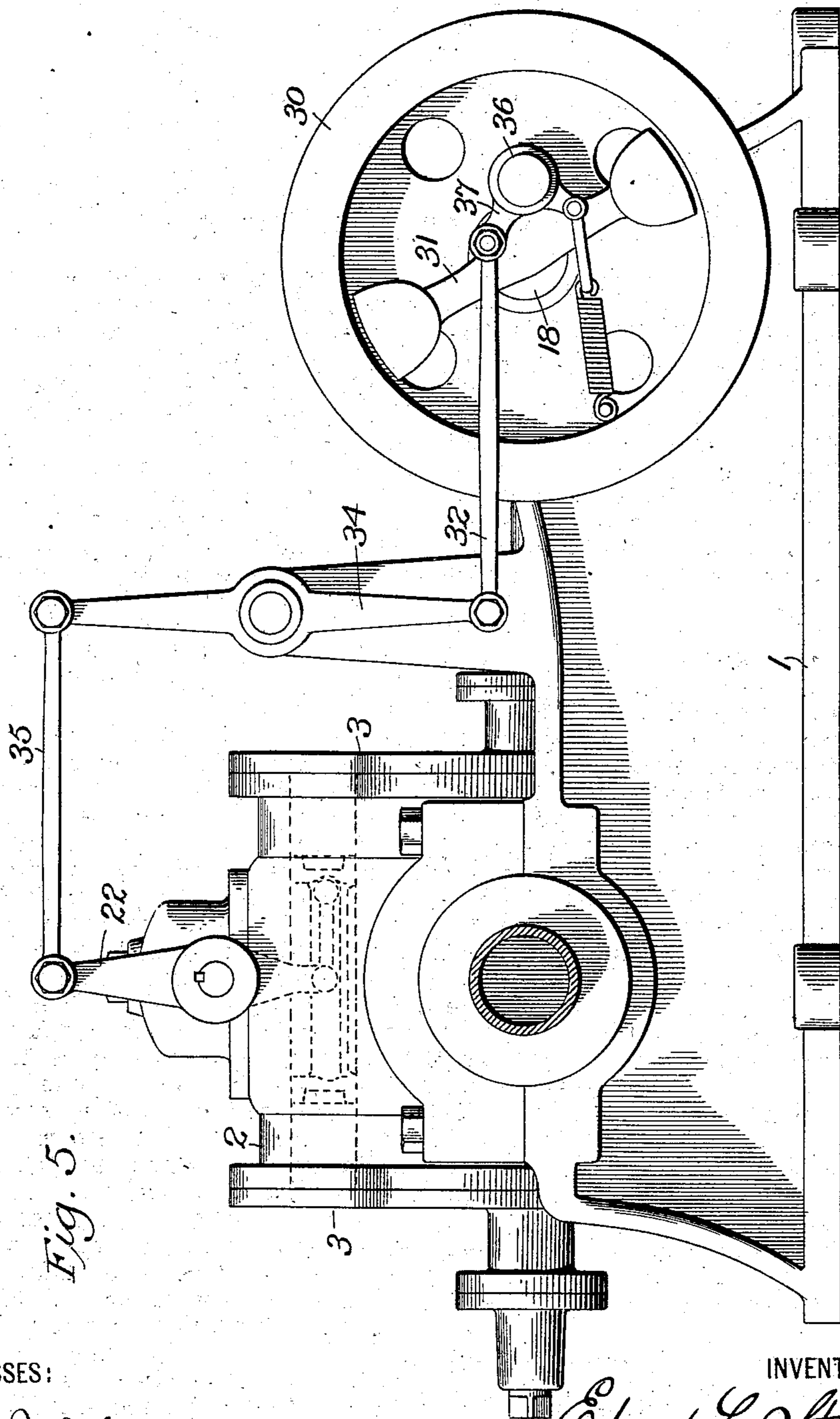


Fig. 5.

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UNITED STATES PATENT OFFICE.

EDGAR L. STREET, OF NEW YORK, N. Y.

OSCILLATING STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 726,110, dated April 21, 1903.

Application filed September 8, 1902. Serial No. 122,469. (No model.)

To all whom it may concern:

Be it known that I, EDGAR L. STREET, a citizen of the United States of America, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Oscillating Steam-Engines, of which the following is a specification.

This invention relates to certain new and useful improvements in steam-engines, and more particularly to that subdivision of the general class known as "oscillating" steam-engines.

The object of the invention is to simplify the construction, economize in the use of steam, promote durability and efficiency, and attain many other important advantages that have hitherto been accomplished only imperfectly in engines of this class.

The invention consists, primarily, in a new and useful valve mechanism whereby a suitable valve actuated from the crank-shaft is caused to admit steam to the cylinder, also in means whereby the speed is regulated by a fly-wheel or shaft-governor, and also in the numerous details in the construction, arrangement, and combination of the various parts, substantially as will be hereinafter described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a top plan view of my improved steam-engine. Fig. 2 is a side elevation of the same. Fig. 3 is a longitudinal section of the cylinder and valve-chest. Fig. 4 is a transverse section of the cylinder and chest, together with the cylinder-trunnions and the steam-pipes entering them. Fig. 5 is a side elevation similar to Fig. 2 and shows one arrangement of a fly-wheel or shaft-governor.

Similar numerals of reference denote like parts throughout all the figures.

1 designates the bed or main frame of my improved steam-engine, which may obviously be of any desired form and size. In one end of this main frame the main crank-shaft 18 is journaled, said shaft having the crank 21, to which is connected the piston-rod 5. (See Fig. 1.)

2 denotes the cylinder, which may be of any common type, consisting of a working barrel,

within which is a reciprocating piston 4, to which the rod 5 is connected. Cylinder 2 has heads 3 3, formed with central bosses 10, that receive the elongated packing-glands 7, which support the rod 5 and are secured to the bosses 10 by means of bolts 9, there being some suitable packing material, as 8, placed around the rod 5 and it being noted that said rod passes through both heads 3 and also through the piston 4, the latter having a central screw-threaded passage to receive and engage with a screw-threaded portion of the piston-rod 5, as shown in Fig. 3. Thus the piston-rod 5 is supported in two fixed bushings or glands—one in each cylinder-head—which serve the double purpose of holding the packing and of resisting the wear due to the oscillation of the cylinder. These rigidly-fixed glands 7 may, by removing bolts 9, then axially rotating the glands 7 more or less about the piston-rod, and then replacing the bolts, be put into a new position whenever wear has taken place in the original one, so that a new surface may be exposed to wear. The cylinder 2 is provided also with the integral lateral trunnions 14 14, that are mounted in suitable boxes on the main frame 1, and on these trunnions the cylinder performs its oscillations. The cylinder is further provided on one side with a valve-chest 11, containing a slide-valve 12 of a flat or plate-like form or of a piston or other suitable form, said valve being moved in such a way as to distribute the steam to operate the engine and controlling the cylinder inlet and outlet ports 13 13 and the exhaust-port 26. On the valve-chest 11 is a chamber 26, secured by bolts or any other proper means, and in this chamber is journaled a rock-shaft 23, having an internal arm 24, that is pivoted to a link 25, which is in turn pivoted to the slide-valve 12, all as shown in Fig. 3, the parts being so combined and connected that the vibration of the rock-shaft 23 in one direction or the other will correspondingly shift the position of the slide-valve 12, and thus admit steam to one end or the other of the cylinder—that is to say, admit it alternately to the opposite ends—so as to reciprocate the piston. The rocking of the shaft 23 may be effected by means of an eccentric-rod 19 or other suitable connection pivoted to an arm

22, fixed on the shaft 23 outside of the chamber 26, said rod 19 being actuated by an eccentric 20 on crank-shaft 18.

By referring to Fig. 4 it will be seen that
 5 one of the bearings for the support of the rock-shaft 23 is a horizontal boss 27, that projects a short distance laterally from the chamber 26 to afford a bearing of substantial size and length, and this boss is externally cylindrical to receive thereon a sleeve 28, integral with and forming the lower end of the arm 22. This sleeve 28 is made fast on the shaft 23 by means of a set-screw or other device 29. Thus the sleeve 29 rocks on the boss 27,
 15 and the wear all comes between these two parts, which is an important item in saving wear and causing an even regular movement of vibration. The combined action of the oscillation of the cylinder and the motion thus
 20 derived from the crank-shaft gives a highly-desirable motion of the valve for the purpose of steam distribution in the cylinder. The motion of the valve, which, as stated, is derived from the eccentric, may be a fixed and
 25 regular one, as shown in the drawings, or the eccentric may be governed by any shaft or fly-wheel governor of approved design. Instead of the eccentric 20 a fly-wheel or shaft-governor, as shown in Fig. 5, may be employed. One example of such a governor is
 30 indicated in said Fig. 5, where it is seen to consist of a wheel 36, fixed on shaft 18. Pivoted to the wheel 36 is a piece 37, which is pivoted to the fly-weight 31. A rod runs from
 35 this weight 31 to the pivoted lever 34, which connects by a link 35 with the rock-shaft arm 22. As the speed varies the fly-weight 31 is influenced and adjusts itself. A reduction in the throw of the valve changes the steam
 40 admission and compression to suit the load and maintains the speed of the engine practically constant.

The cylinder-trunnions 14 14 contain concentric sleeves or bushings 15, having external
 45 flanges that are bolted to the outer ends of the trunnions, as shown in Fig. 4, and these bushings are entered by steam-pipes 17,

one serving for the live steam and the other for exhaust. These pipes are stationary and may be of any suitable size and shape. 50 Their inner ends are screw-threaded to receive the brass sleeves or rings 16, that are screwed thereon and are fitted tightly against the ends of the bushings 15, (see Fig. 4,) the purpose of this construction being to check 55 and prevent the leakage of steam without the use of packing at this point.

Many changes in the precise construction and arrangement of the parts may be made without departing from my invention, and I 60 reserve the liberty of making such changes and departures from the disclosure herein given.

Having thus described my invention, what I claim as new, and desire to secure by Letters 65 Patent, is—

1. In a steam-engine, the combination of an oscillating cylinder having a steam-chest thereon, a steam-distributing valve, a rock-shaft on said cylinder, which rock-shaft enters the said steam-chest, an internal lever 70 in said steam-chest fastened to said rock-shaft and communicating motion from said rock-shaft to said distributing-valve, a main crank-shaft and means whereby the latter 75 communicates motion to the rock-shaft.

2. In a steam-engine, the combination of an oscillating cylinder having a steam-chest thereon, a steam-distributing valve, a rock-shaft on said cylinder, which rock-shaft enters the said steam-chest, an internal lever 80 in said steam-chest fastened to said rock-shaft and communicating motion from said rock-shaft to said distributing-valve, a main crank-shaft and means whereby the latter 85 communicates motion to the rock-shaft, and a fly-wheel or shaft-governor for regulating the speed of the engine.

Signed at New York city this 4th day of September, 1902.

EDGAR L. STREET.

Witnesses:

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