

No. 838,669.

PATENTED DEC. 18, 1906.

J. H. TREVORROW.
ENGINE.

APPLICATION FILED DEC. 12, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

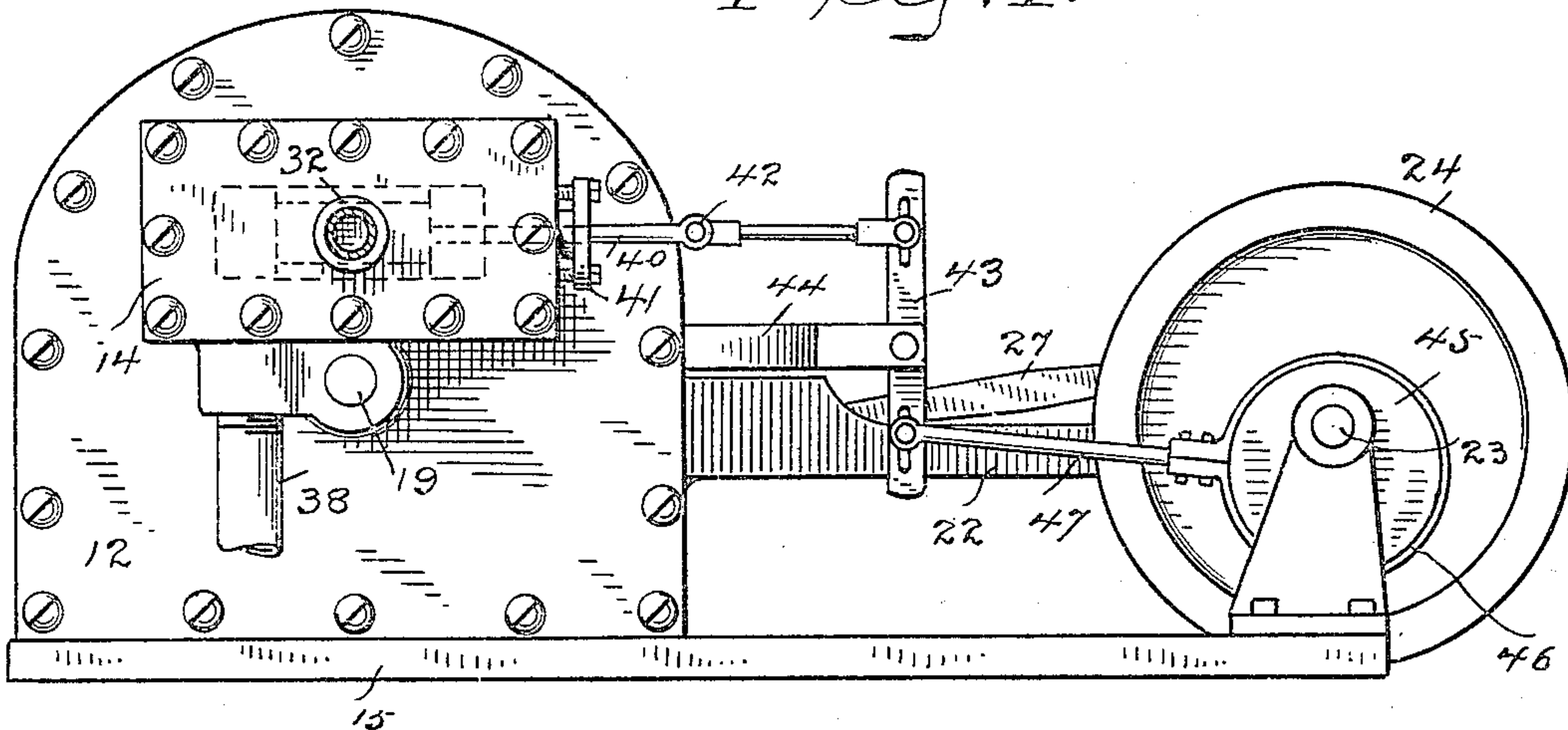


Fig. 2.

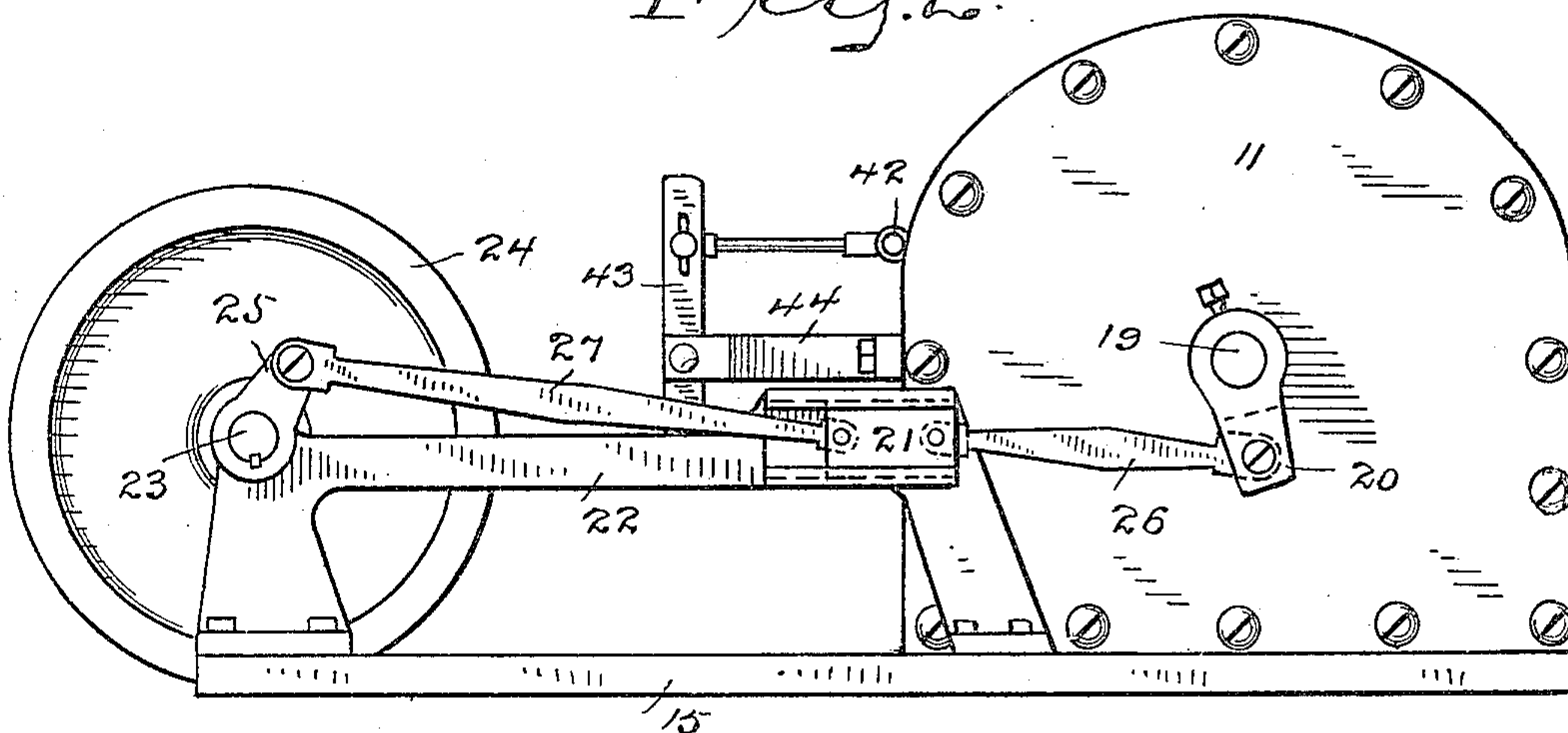
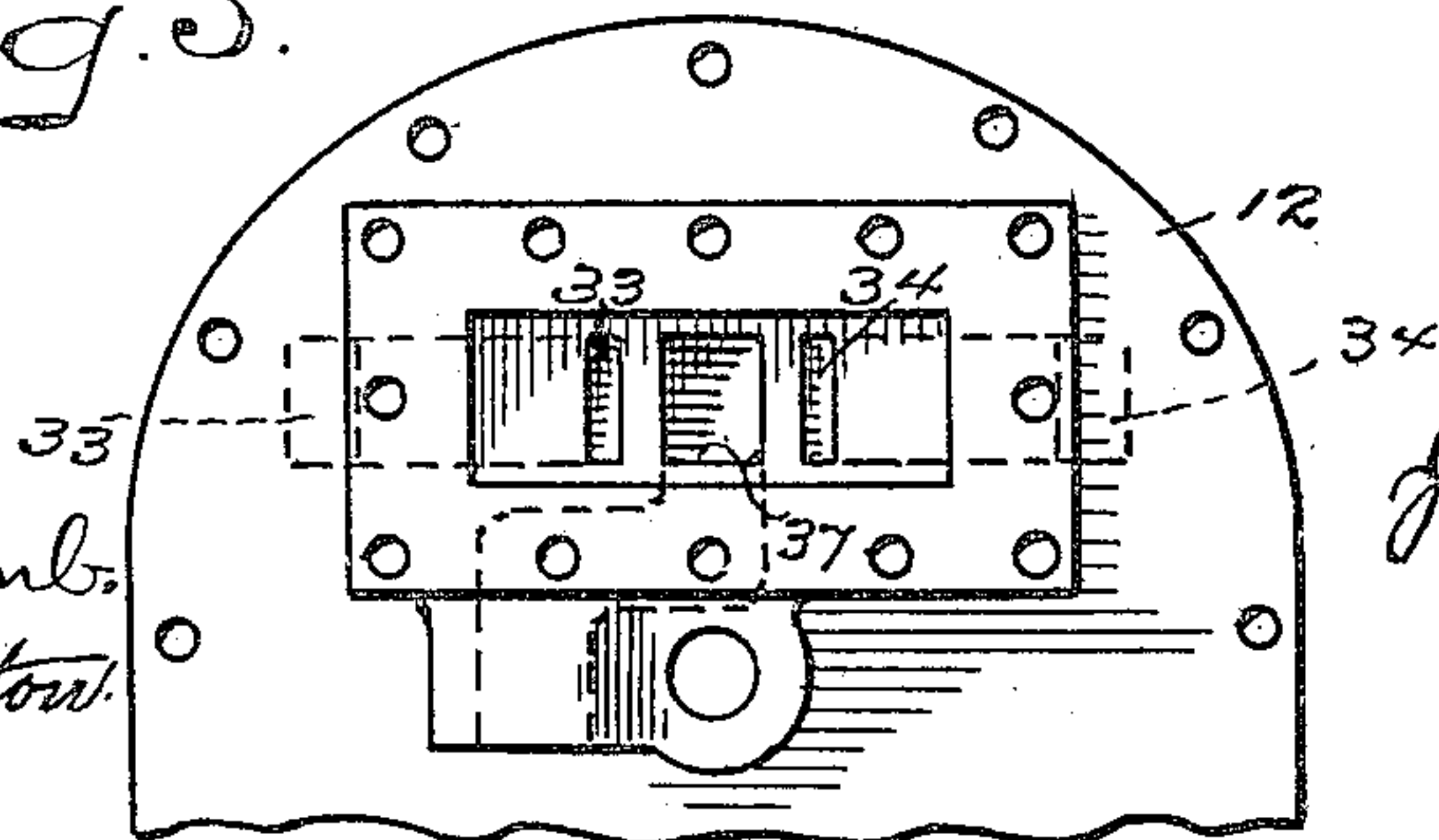


Fig. 5.

WITNESSES

H. A. Lamb.
S. W. Atherton.



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2 SHEETS—SHEET 2.

Fig. 3.

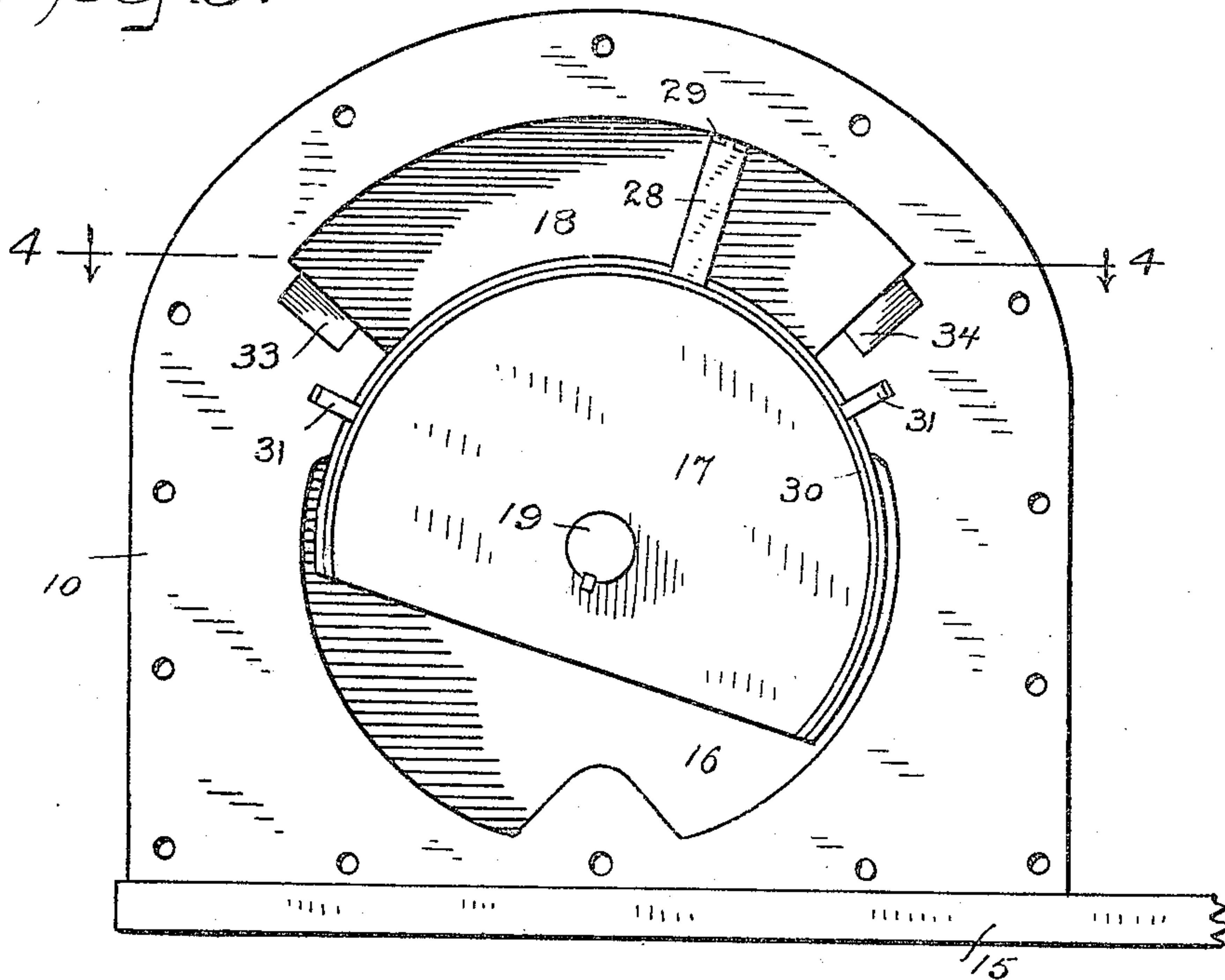
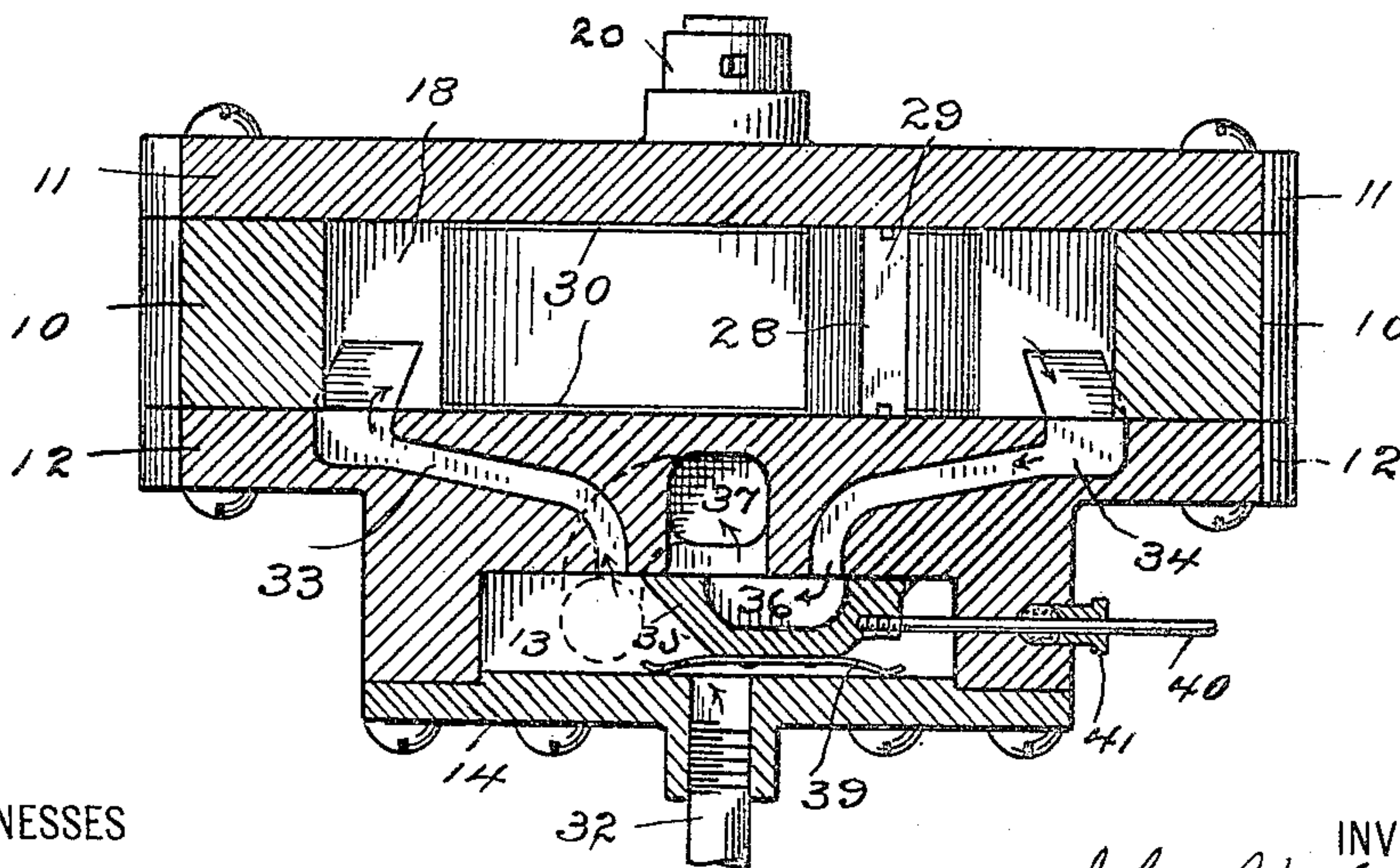


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN H. TREVORROW, OF SHELTON, CONNECTICUT.

ENGINE.

No. 838,669.

Specification of Letters Patent.

Patented Dec. 18, 1906.

Application filed December 12, 1905. Serial No. 291,431.

To all whom it may concern:

Be it known that I, JOHN H. TREVORROW, a citizen of the United States, residing at Shelton, county of Fairfield, State of Connecticut, have invented a new and useful Engine, of which the following is a specification.

This invention has for its object to provide an engine adapted for use with either steam or gas as a motive power in which the number of parts and the cost of construction shall be reduced to the minimum and which shall be especially adapted to stand hard usage, for the reason that the parts are few in number, and the construction of the engine is such as to make it well nigh impossible for it to get out of repair under the ordinary conditions of use.

With these and other objects in view my invention consists in certain constructions and in certain parts, improvements, and combinations which will be hereinafter described, and then specifically pointed out in the claim hereunto appended.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of my novel engine complete; Fig. 2, a reverse side elevation; Fig. 3, a side elevation, on an enlarged scale, of the body with the face-plate and steam-chest removed, showing the construction and operation of the piston; Fig. 4, a transverse section on the line 4 4 in Fig. 3 looking down; and Fig. 5 is an elevation of the face-plate and steam-chest removed, the face-plate of the steam-chest also being removed.

In the drawings I have illustrated the application of the principle of operation to a steam-engine only and shall confine the description to that type of engine.

The body of the engine comprises three parts—to wit, a central casting, (indicated by 10,) a back plate, (indicated by 11,) and a face-plate, (indicated by 12.) The steam-chest (indicated by 13) is shown as cast integral with the face-plate and as itself provided with a face-plate 14. The entire body of the engine is shown as resting upon a base 15. Within the body is a chamber 16, which receives the piston 17, and above chamber 16 is a steam-chamber 18. The piston, which is oscillatory in its action, is carried by a shaft 19, journaled in the back and face plates and carrying at one end a crank 20. 21 denotes a cross-head which reciprocates on a frame 22, which rests upon and is rigidly secured

to the base. 23 denotes the driving-shaft, which is journaled on frame 22 and carries a fly-wheel 24 and is provided with a crank 25. A driving-belt (not shown) may be passed over the fly-wheel, and additional driving-wheels (not shown) may be provided on shaft 23. 26 denotes a connecting-rod extending from crank 20 to the cross-head, and 27 a connecting-rod extending from crank 25 to the cross-head.

The piston is provided with a radial wing 28, having at its outer end a packing 29, which closely engages the walls of the steam-chamber, the outer wall of said steam-chamber being of course curved in an arc to correspond with the sweep of the wing. The piston is shown as provided with segmental packing-flanges 30, which engage the side walls of the steam-chamber, and packings 31 are provided in the walls of central casting 10, which engage the periphery of the piston outside the ends of the steam-chamber, thus effectually preventing the escape of steam therefrom. Steam is conveyed to the steam-chest by means of the pipe 32. Oppositely-extending ports 33 and 34 lead from the steam-chest to the opposite ends of the steam-chamber.

Within the steam-chest is a valve 35, which may be of the ordinary D type, the recess 36 in which is large enough to connect with either port and with the exhaust-opening 37, which is shown as opening into an exhaust-pipe 38. A spring 39, bearing against the face-plate of the steam-chest, retains the valve in operative position—that is, covering the exhaust and one of the ports at all times, as clearly indicated in Fig. 4. The valve is operated by means of a valve-rod 40, which extends through a stuffing-box 41 in the wall of the steam-chest, is jointed, as at 42, and the outer end of which is pivoted to a lever 43, fulcrumed on a bracket 44, extending from the body.

45 denotes an eccentric on driving-shaft 23. This eccentric is provided with a strap 46, which is connected with the opposite end of valve-lever 43 by means of an eccentric-rod 47.

The operation is as follows: Ports 33 and 34 act alternately as steam and exhaust ports. In Figs. 3 and 4 port 33 is acting as a steam-port, and steam entering the left end of the steam-chamber and acting on the wing extending from the piston has moved said wing and the piston toward the end of the throw toward the right, steam on the opposite side

of the wing exhausting through port 34 and passing through the valve and the exhaust-opening to exhaust-pipe 38. An instant later the forward movement of the valve will close port 33 and port 34 will begin to take steam, which it will deliver on the opposite side of the wing and move it toward the left again, the steam in front of the piston exhausting through port 33 and passing through the valve to the exhaust-opening and exhaust-pipe, as before. The movement of the wing and piston from right to left will continue until the passage of steam through port 34 is cut off and port 33 takes steam again.

Having thus described my invention, I claim—

An engine consisting of a base, a frame mounted upon said base at one end, a fly-

wheel mounted upon one end of said frame, a cross-head mounted upon the other end of said frame, a casing mounted upon said base, an oscillating piston within said casing, crank and rod connections between the oscillating piston and the cross-head, and the cross-head and the fly-wheel respectively, the casing for the oscillating piston comprising a central casting and back and face plates, a steam-chest supported by one of said plates, a valve in said chest, an eccentric on the shaft of the fly-wheel, and operating connections between said eccentric and valve.

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

JOHN H. TREVORROW.

Witnesses:

A. M. WOOSTER,
S. W. ATHERTON.