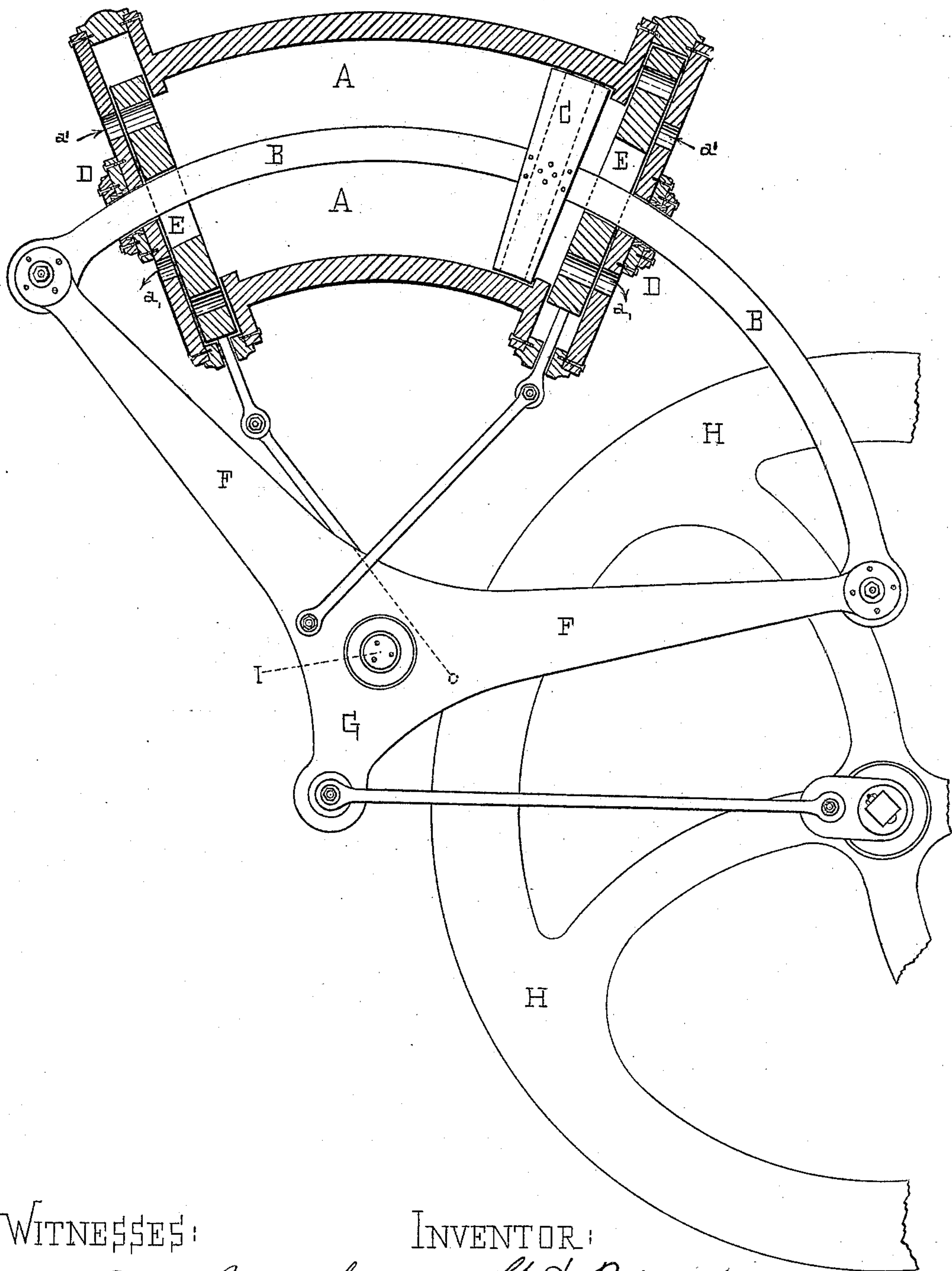


(No Model.)

G. S. PEPPARD.
STEAM ENGINE OR WATER MOTOR.

No. 299,161.

Patented May 27, 1884.



WITNESSES:

B. von Uuwerk
P. M. Magrath

INVENTOR:

G. S. Peppard

ATTORNEY:

J. C. Higdon

UNITED STATES PATENT OFFICE.

GERRITT S. PEPPARD, OF KANSAS CITY, MISSOURI.

STEAM-ENGINE OR WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 299,161, dated May 27, 1884.

Application filed October 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, GERRITT S. PEPPARD, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Steam-Engines or Water-Motors; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention consists of a working-cylinder of the form termed "segmental," a piston fitted therein, a piston-rod bent to the proper circle and fitted to the piston, and attached or connected at each of its ends to working-arms oscillating upon a pin in the engine-framing. The cylinder is provided with combined steam and exhaust balanced valves operating between the faced surface of the cylinder-covers and the ends of the cylinder. The valves are operated by rods attached to a pin inserted in the boss of the working-arms, and the whole is arranged to operate a crank by means of the shorter of three working-arms and a connecting-rod, the arrangement sought for being to use a much shorter crank than is now employed in engines, and to obtain a leverage over the work; also, by the form of valves and direct ports, to give the freest admission and ejection to the steam or water.

Reference is to be had to the accompanying drawing, forming part of this specification, in which similar letters of reference indicate corresponding parts.

In the figure a cylinder is sectioned through valves and stuffing-boxes, and a side elevation shows the arrangement of outside connections, including a fly-wheel.

A A represent a cylinder, which I locate in any desired position for its work, or in the position here shown.

C represents the piston, and B the piston-rod, with the piston at the end of the stroke. Steam or water being admitted through the port *a*, the piston is driven to the opposite end of the cylinder. Meanwhile the valves E E have changed positions, and steam is admitted

to the other side of the piston. The exhaust-port of the starting end has liberated the contained steam while the exhaust-valve of the opposite end is in the reverse position.

The ports *a' a'* may be used as admission-openings, and *a a* as exhaust-ports. This last arrangement is deemed much preferable by the readiness with which condensed steam or water may make its exit.

The valves E E may be operated by eccentrics or cams, if preferred, or by employing straight rods attached to pins in the boss of arms, as shown. They also have an opening through their center to allow them to make the required movements without interfering with the piston-rod B, as shown. In reversing the engine the usual link may be employed, or any of the devices now used for the purpose.

The cylinder A A may have either a cylindrical or a square bore.

The piston-rod B is preferably constructed with flat wide sides and rounded edges, that form seeming to have greater strength than a round rod. In operation, the wide surfaces of the rod should stand in a vertical position, as shown.

The arms F F and G are cast or wrought in one piece, as shown; or there may be a brace or web extending from the extremities of the arms F F.

In operation, the cylinder A A is rigidly bolted to the frame of the engine, while the arms F F and G vibrate upon the center-pin I, also embedded in the frame.

The fly-wheel H serves to give momentum to the engine, and is connected to the arm G by the usual connecting-rod and crank.

I do not desire to limit myself to the particular arrangement of parts that is here shown, there being many variations possible. For instance, the whole apparatus may be used in an inverted position, the valves may be operated by eccentrics or cams, a reversing-gear attached, or the arm G may be extended from the opposite side of the pin I, thus bringing the parts nearer together, and other changes may be made.

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

1. The combination, with the cylinder A A, of the piston-rod of this form B, the arms F F

and G, the main pin I, and the packing-boxes D, arranged for operation substantially as shown and described.

2. In an engine for motive power, a radially-
5 bored cylinder, a piston-rod conforming to the circle of the same, and having attached the piston C, and a balanced slide-valve, with openings, as shown, at each end of the cylinder, all

arranged for operation substantially as set forth. 10

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

GERRITT S. PEPPARD.

Witnesses:

H. C. BRENT,

GEO. H. MOSHER.