(No Model.)

C. WOOD.

VALVE GEAR FOR GAS OR OIL ENGINES.

No. 594,146. Patented Nov. 23, 1897.

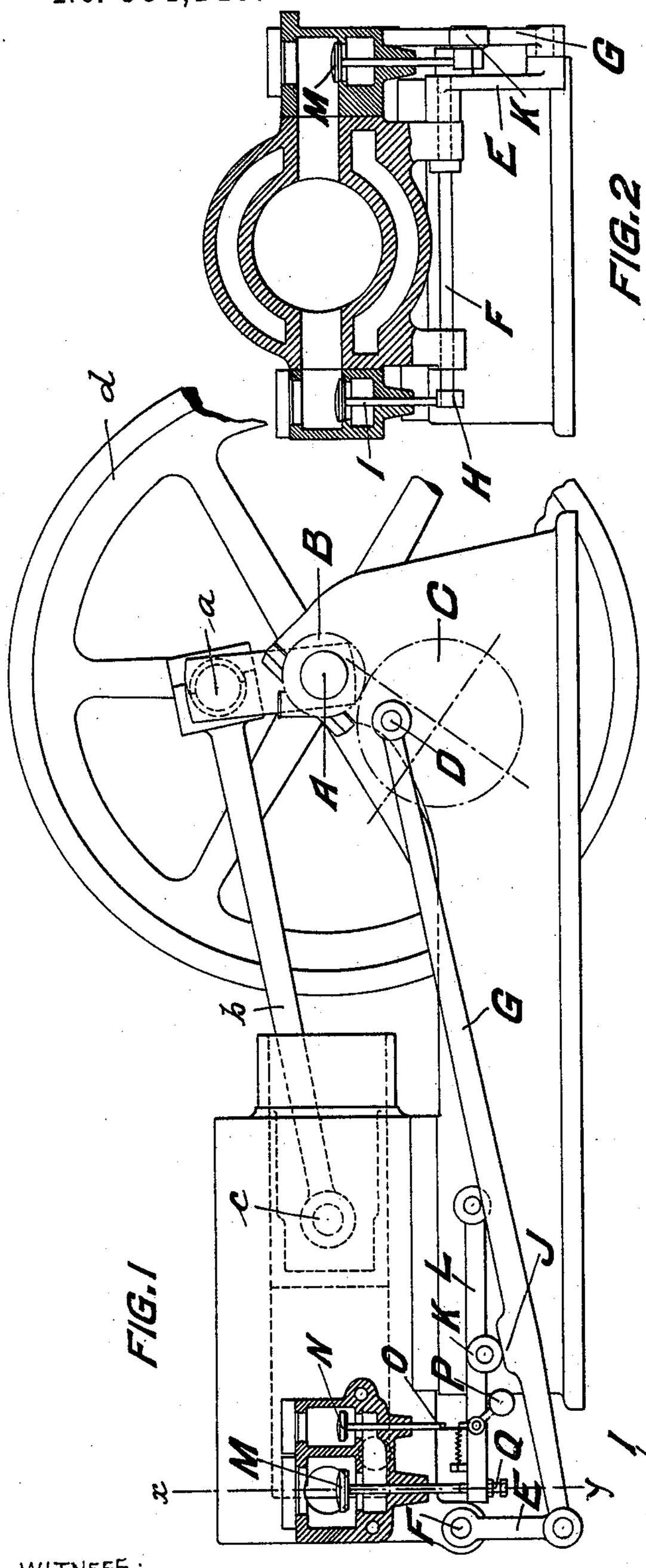

FIG. 2

FIG. 1

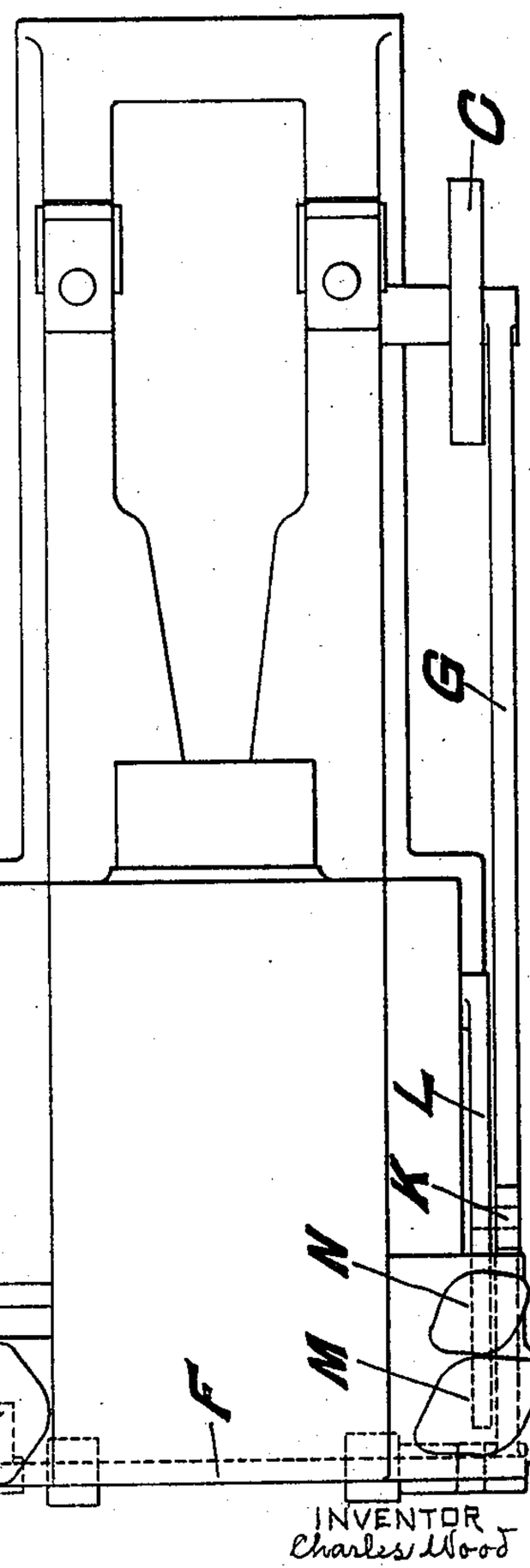

FIG. 3

WITNESS:
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INVENTOR
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UNITED STATES PATENT OFFICE.

CHARLES WOOD, OF LONDON, ENGLAND.

VALVE-GEAR FOR GAS OR OIL ENGINES.

SPECIFICATION forming part of Letters Patent No. 594,146, dated November 23, 1897.

Application filed December 30, 1896. Serial No. 617,476. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WOOD, engineer, a citizen of Great Britain, residing at 22 Bridgewater Square, London, E. C., in the Kingdom of England, have invented certain new and useful Improvements in Valve-Gear for Gas or Oil Engines, of which the following is a specification.

My invention relates to valve-gear for gas and oil engines; and my object is to produce a very simple valve-gear with the minimum number of operating parts.

My invention consists in a method of actuating the air-inlet, gas-inlet, and exhaust valves from the motion of one crank-pin or eccentric, the motion for the valves being taken by a lever from a cam on a link operated by the said crank-pin or eccentric.

Referring to the accompanying sheet of drawings, which illustrates one method of carrying my invention into effect, Figure 1 is a longitudinal elevation part section of an engine fitted with my valve-gear. Fig. 2 is a transverse section on the line X Y, Fig. 1; and Fig. 3 is a plan.

In carrying my invention into effect according to one modification I arrange upon the crank-shaft A a pinion B, which gears into a spur-wheel C of double the number of teeth. In the face of this spur-wheel I provide a crank-pin D, and I connect the crank-pin to a lever E, operating the way-shaft F, by means of a connecting link or rod G. The way-shaft carries at the other end a second lever H, which lever actuates an exhaust-valve I of the usual lift type, which valve is brought to its seat by means of a spring of usual arrangement. The end of the link G, connecting the crank-pin D and the way-shaft lever E, oscillates in an arc to and fro. At a distance from the point of junction to the way-shaft lever on the said link I place a suitable cam-surface J. This cam-surface moves in an irregular ellipse, and on one stroke the cam wipes a roller K, attached to another lever L, which lever operates the air-inlet valve M and also the gas-inlet valve N. The gas-inlet valve is actuated from the said second lever L by a knife-edge O, controlled by an inertia-governor P, and the air-inlet valve is operated from the said lever by means of a screw-adjusted pin Q. This particular combination enables the one motion obtained from the crank-pin in the two-to-one spur-wheel C to accomplish both the opening of the exhaust-valve I and the actuating of the gas and air valves M and N, respectively. The motion for the gas and air valves is more or less at right angles to the motion actuating the exhaust-valve, and the cam J, which lifts the valves on one stroke, misses the roller K on the return stroke, because the cam position falls below on the return movement. By this device I am enabled to operate an engine very simply without any complexities in the gear.

I do not confine myself to the use of a way-shaft for the exhaust-valve, but may so arrange my engine as to combine all the valves on one side of the engine close to each other.

My invention is intended for application to Otto cycle gas and oil engines, and the engine I have described is an Otto cycle-engine, in which *a* is the crank, *b* the connecting-rod, and *c* the piston, while *d* is the fly-wheel. These parts do not require special description, as the Otto cycle is thoroughly well known.

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

In a valve-gear for "Otto" cycle gas or oil engines, the combination of the exhaust-valve, a lever and rod for operating the valve, an eccentric or crank running at half the speed of the engine for operating the lever and rod, the air-valve, the gas-valve and the governor, and a single lever for operating the said air-valve, gas-valve and governor and a cam on the eccentric link or rod for operating the single lever, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CHARLES WOOD.

Witnesses:

WILLIAM EDWARD EVANS,

ALBERT EDWARD PARKER.