

(Model.)

P. JOSSERAND.
Valve Gear for Engine.

No. 229,708.

Patented July 6, 1880.

Fig. 1.

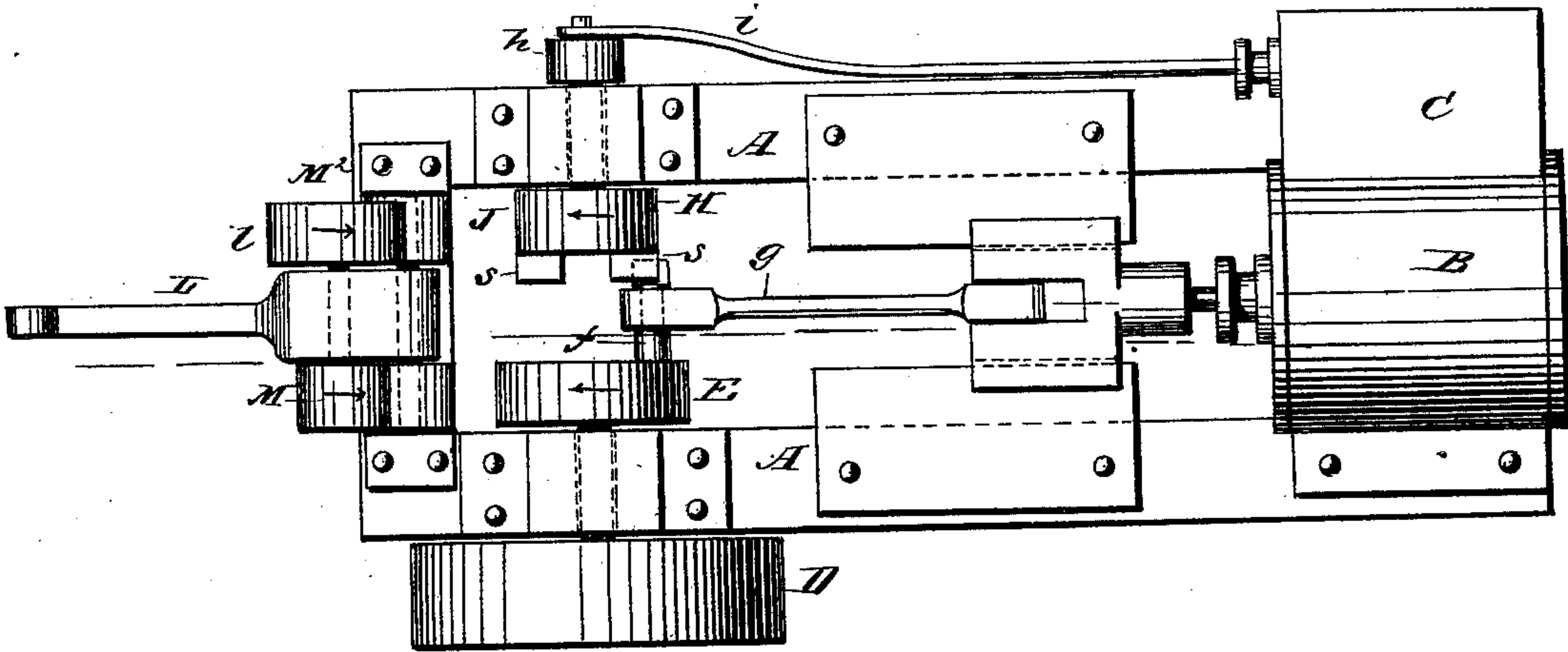
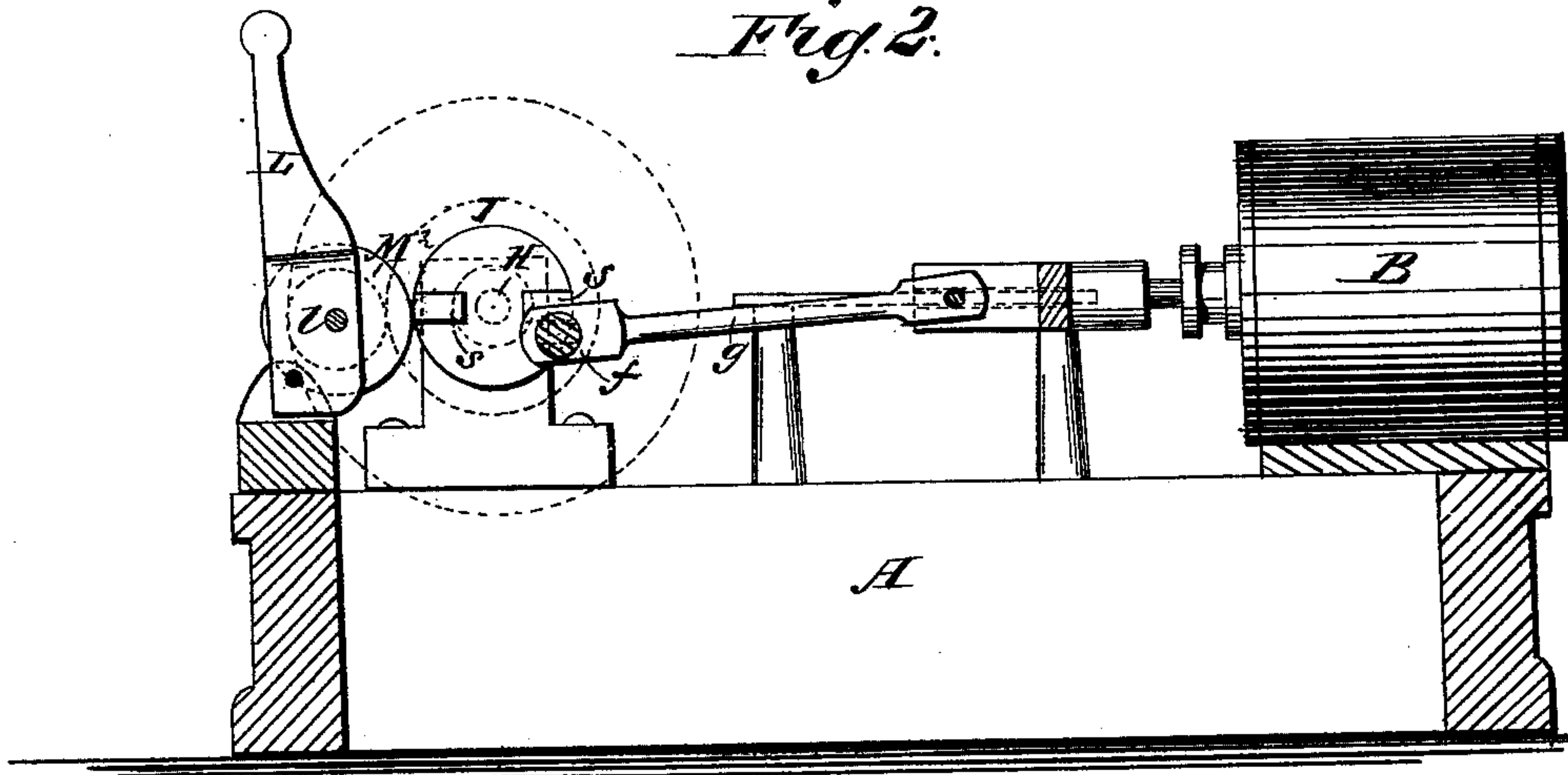


Fig. 2.



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VALVE-GEAR FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 229,708, dated July 6, 1880.

Application filed April 22, 1880. (Model.)

To all whom it may concern:

Be it known that I, PETER JOSSERAND, of Hockley, in the county of Harris and State of Texas, have invented a new and useful Improvement in Steam-Engine Valve-Gears, of which the following is a specification.

The invention consists in combining with a crank-shaft and a valve-shaft a lever, shaft, and two friction-wheels, as hereinafter described.

In the accompanying drawings, Figure 1 is a top view of an engine embodying my improvements. Fig. 2 is a longitudinal vertical section of the same.

Similar letters of reference indicate corresponding parts.

A is the engine-bed; B, the cylinder; C, the valve-chest, and D the crank-shaft. The crank-shaft D is provided with a disk, E, having a wrist-pin, *f*, to which the pitman *g* is connected. The pin *f* extends entirely through the pitman and projects beyond the same.

In the bed A, in line with the crank-shaft, is journaled a shaft, H, on the outer end of which is a crank-wheel, *h*, to which the valve-stem *i* is connected. The opposite or inner end of this shaft carries a face-plate or disk, J, provided with two stops or abutments, *s s*, diametrically opposite each other. The projecting portion of the wrist-pin *f* engages with these abutments and gives a continuous rotary motion to the shaft H and its crank-wheel *h*, and a reciprocating motion to the valve-stem *i*, and thus operates the valves. If desired, the shaft H may be arranged to operate the valve-stem through a rock-shaft instead of directly, as shown.

When the crank-shaft D carries a regular crank instead of the disk and wrist-pin, said crank is provided with a projection for engagement with the stops *s*. These stops *s* may be secured to the disk J by means of bolts working in slots, so as to enable the stops to be adjusted in order to regulate the lead of the valve.

In order to reverse the engine the shaft H is turned less than a half-revolution, so as to disengage one of the stops *s* from one side of the projection or pin *f* and cause the other stop *s* to engage with the opposite side of said pin. This motion of the shaft reverses the position of the valve, so as to close one port and open the other and cause the steam to act on the opposite side of the piston.

So far as above described, the reversing of

the engine can only be accomplished while the parts are at rest; but in order to provide for reversing the engine while in motion, I employ a device arranged and operating as follows:

At the end of the engine-bed nearest the crank-shaft is pivoted the lower end of a lever, L, in which, above its fulcrum, is a shaft, *l*, parallel with the shafts D and H and having friction-wheels M M² at its ends, one on each side of the lever. The wheels M M² are fast on the shaft *l* and turn with it, and said shaft turns freely in its bearings in the lever. When not in use the lever L lies in the position shown in Fig. 1.

When it is desired to reverse the engine while in motion, the lever L is raised to the position shown in Fig. 2. This brings the face of the wheel M in contact with the face of the wheel E on the crank-shaft D, and the wheel M² in contact with the face-plate or disk J. The wheel M is much smaller in diameter than the wheel E, and consequently the velocity imparted to the shaft *l* is much greater than that of the crank-shaft D, and this greater velocity is imparted through the wheel M² to the wheel J, and causes it to move faster than it was previously moved by the pin *f* and stop *s*, so as to disengage that particular stop from one side of said pin and throw the other stop against the opposite side of said pin. This moves the valve, as before described, so as to first arrest and then reverse the motion of the piston in the cylinder. As soon as the reversal is accomplished the pressure of the lever L and wheels M M² is removed, so as to allow the now reversed motion of the engine to continue.

The lever L may also be connected with one end of a reciprocating bar provided with a suitable lever at the other end in order that the engine may be reversed at a point some distance therefrom.

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

The combination, with a crank-shaft and a valve-shaft, operating as above described, of a lever, a shaft, and two friction-wheels of different diameters for receiving motion from said crank-shaft and transferring said motion at an increased velocity to said valve-shaft, substantially as and for the purpose herein described.

Witnesses: PETER JOSSERAND.
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