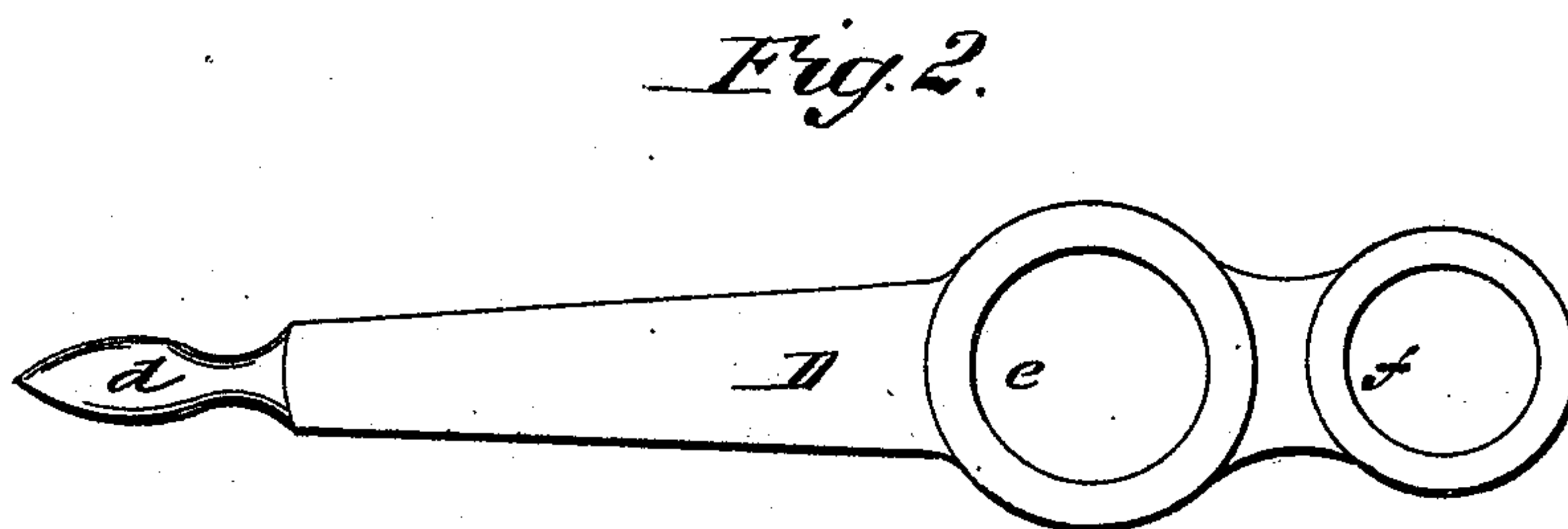
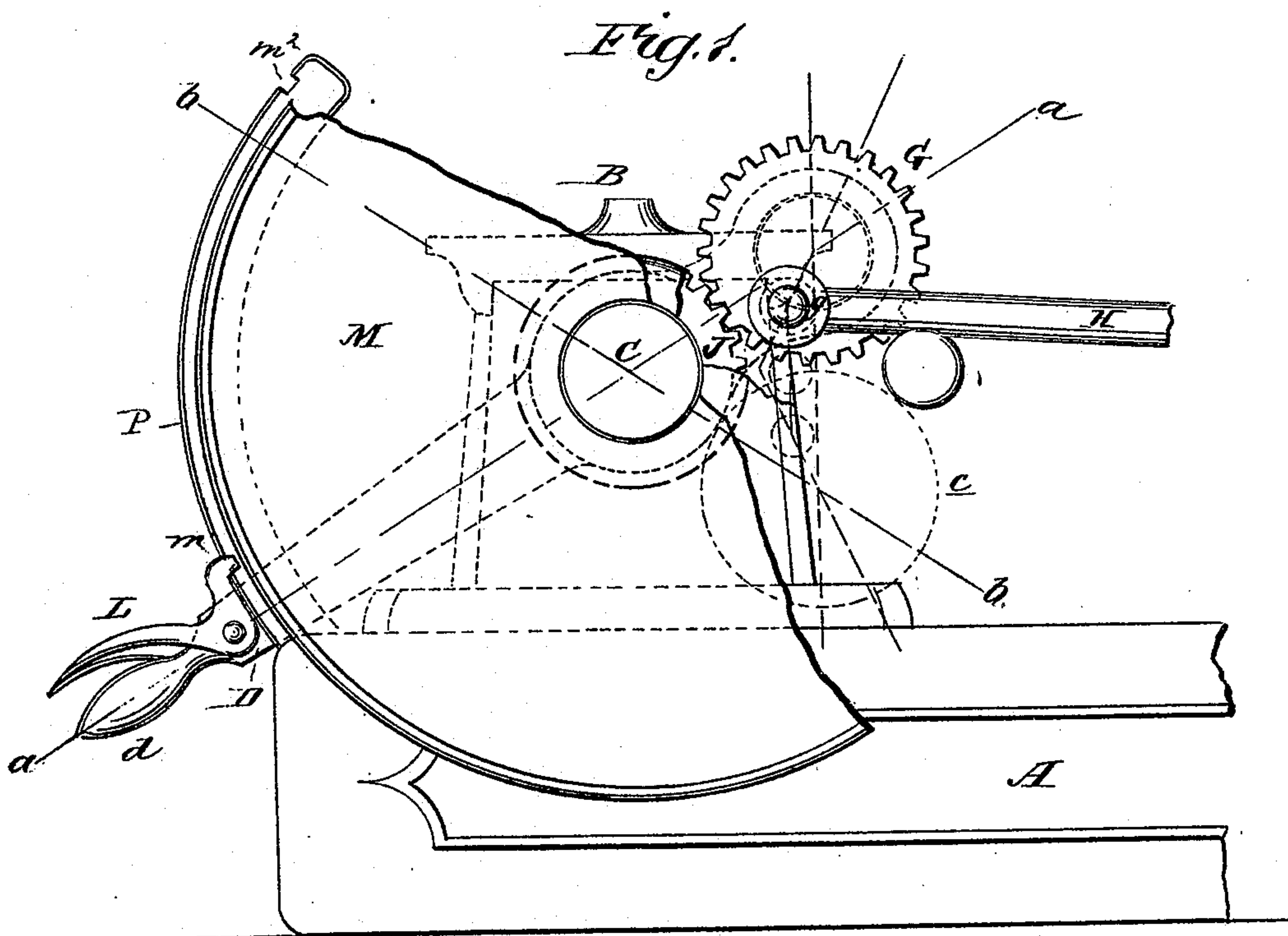


Model.

E. A. MARSH.
Steam Engine Valve Gear.

No. 236,052.

Patented Dec. 28, 1880.



WITNESSES:

Francis McArthur.
C. Seagwick

INVENTOR:

E. A. Marsh

BY

Mini Ho

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ELON A. MARSH, OF BATTLE CREEK, MICHIGAN, ASSIGNOR OF ONE-HALF
TO MINARD LAFEVER, OF SAME PLACE.

STEAM-ENGINE VALVE-GEAR.

SPECIFICATION forming part of Letters Patent No. 236,052, dated December 28, 1880.

Application filed May 3, 1880. (Model.)

To all whom it may concern:

Be it known that I, ELON A. MARSH, of Battle Creek, in the county of Calhoun and State of Michigan, have invented a new and
5 useful Improvement in Steam-Engine Valve-Gear, of which the following is a specification.

My invention relates to certain improvements in reversing-gear for steam-engines; and it consists in the combination, with the
10 main shaft of the engine and the valve-rod, of two intermeshing gear-wheels of equal diameter, one mounted on the main shaft and the other upon a lever fulcrumed to the main shaft and connecting with the valve-rod by a wrist-
15 pin in such manner that the last-mentioned wheel may be thrown to either side of a line on the plane of the reciprocation of the valve and the center of the main driving-shaft, and thus change the motion of the valve and engine.

20 In the accompanying drawings, Figure 1 represents a side elevation of a portion of an engine, showing my improved reversing-gear; and Fig. 2, a detached view of the reversing-lever.

25 The letter A indicates the bed of the engine, B the pillow-block, and C the main driving-shaft, which may be of the ordinary description.

The letter D indicates a lever, having a bearing, *e*, by which it may be fulcrumed to the driving-shaft near one end, and a similar bearing, *f*, for the journal of the toothed gear-wheel G. The said wheel, when the parts are
30 in place, intermeshes with a wheel, J, equal in diameter and similar in all respects to the wheel G, the said wheel J being rigidly secured to the driving-shaft C, so as to rotate with it and impart motion to the wheel G.

The letter *g* indicates a wrist-pin secured to

the wheel G, to which one end of the valve-rod 40 H is pivoted.

The free end of the lever D is provided with a handle, *d*, and a spring-pawl, L, which is adapted to engage the detents *m'* *m*² in the edge of a quadrant, P. The letter M indicates 45 the fly-wheel of the engine, a portion being broken away to show the intermeshing gears.

The operation of my invention is as follows: When the parts are in the position with the lever on the line *a a* the wheel G will be above 50 a horizontal line drawn through the center of the driving-shaft and the plane of reciprocation of the slide-valve, causing the valve to move in one direction. To reverse the engine, it is evident that it is only necessary to alter 55 the position of the lever so as to bring it on the line *b b*, carrying the wheel below the plane of reciprocation of the valve and the center of the shaft C, and thus changing the motion of the valve. 60

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

In combination with the main driving-shaft of an engine and the valve-rod thereof, the 65 intergearing cog-wheels of equal diameter, one fixed on the driving-shaft and the other capable of a movement partially around the first mentioned, the latter having a wrist-pin, to which the valve-rod of the engine is connected, 70 whereby said valve-rod is adapted to reciprocate the valve and operate the same to reverse the engine, substantially as specified.

ELON A. MARSH.

Witnesses:

E. R. SMITH,
W. G. MOREHOUSE.