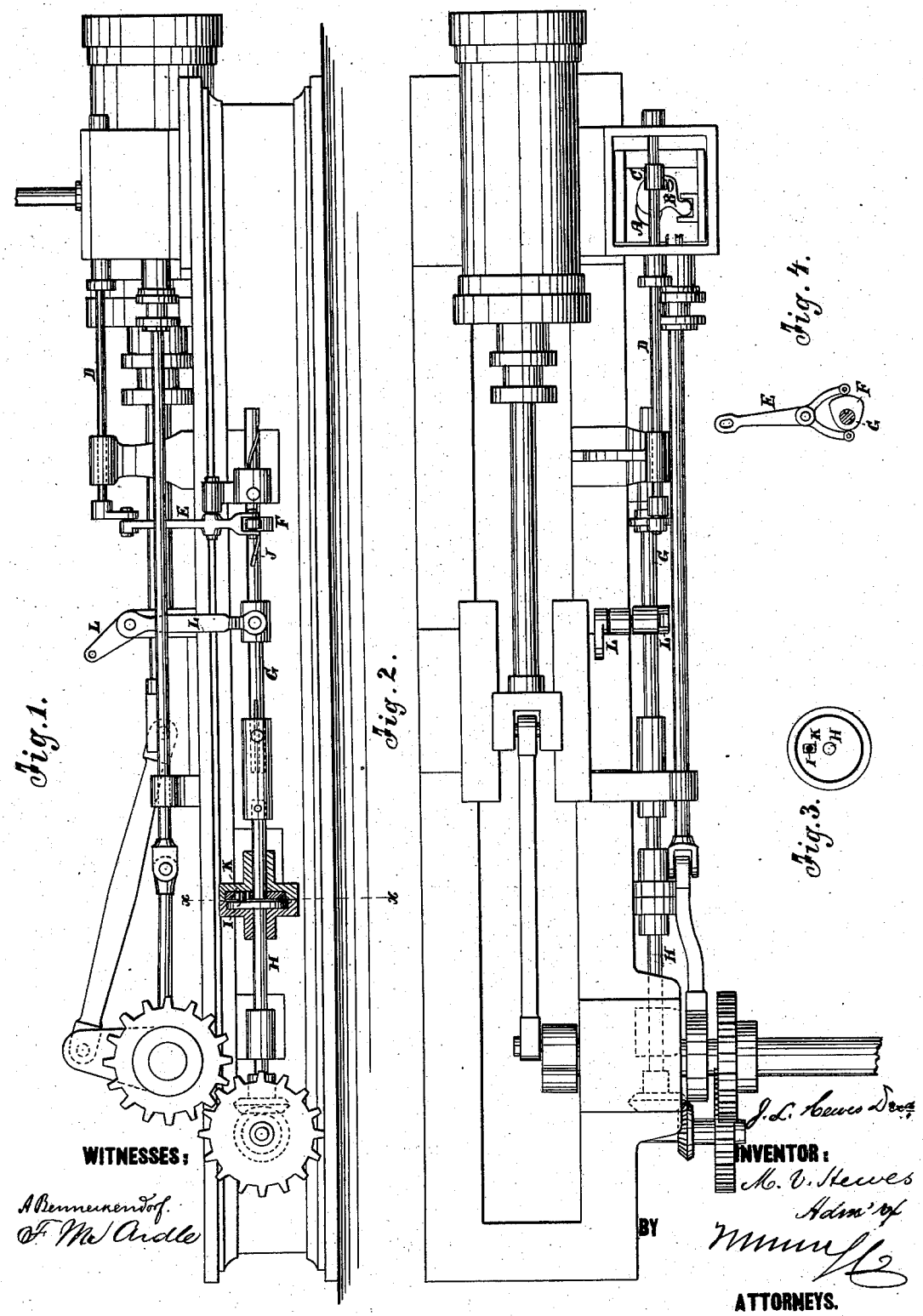
J. L. HEWES, dec'd.
M. V. HEWES, Adm'rx.

Valve-Gear for Steam-Engines.

No. 164,736. Patented June 22, 1875.



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UNITED STATES PATENT OFFICE.

MARGARET V. HEWES, OF NEWARK, NEW JERSEY, ADMINISTRATRIX OF JOSEPH L. HEWES, DECEASED.

IMPROVEMENT IN VALVE-GEARS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **164,736**, dated June 22, 1875; application filed March 6, 1875.

To all whom it may concern:

Be it known that JOSEPH L. HEWES, late of Newark, in the county of Essex and State of New Jersey, deceased, did invent a new and useful Improvement in Steam-Engines, of which the following is a specification:

The invention consists of the cut-off valve geared with the driving-shaft by a compensating contrivance to cause the valve to gain on, and fall back of, the motions of the driving-shaft at each revolution in the proportion of its variations with the piston by the effect of the different angles of the crank, and thus cut off exactly alike for each movement of the piston, whereas there is always a slight variation between the cutting off for the forward and backward movements when the cut-off is positively geared, no matter in what way, because the piston and valve travel farther in one-half revolution of the crank than in the other, which causes a variation of one relatively to the other, owing to their movements not being timed alike.

Figure 1 is partly a side elevation and partly a sectional elevation of the improved engine. Fig. 2 is a plan view. Fig. 3 is a section on the line *x x* of Fig. 1. Fig. 4 is a section of the shaft for working the cut-off, showing the cam and the rock-lever in side elevation.

Similar letters of reference indicate corresponding parts.

A is the cut-off valve; B and C, rock-arms; D, a rock-shaft; E, a rock-lever; and F a cam for working the rock-lever, and thereby working the cut-off. This cam is on a revolving shaft, G, which, according to this invention, is placed a little out of line with another shaft, H, and connected to it by a crank-pin, I, thereof entering a slot, K, of a disk on it, so that as the shaft H turns synchronously with the crank-shaft of the engine the cam-shaft G will gain a little of the piston on one stroke, and fall back of it a little on the other stroke, and thus compensate for the variations caused between the valve and the piston by their further and untimely movements in one-half of the revolution of the crank-shaft than in the other, and so cut off exactly at corresponding points in each stroke of the piston.

For connecting the governor to the cut-off for regulating the motion of the engine thereby, the shaft G is made in two sections, one of which is capable of sliding forward and backward through the cam F, which has a spiral groove, J, for the key of the cam, and is to be connected, by the cranked lever L, with the governor to be shifted forward and backward in the cam to set it for cutting off earlier or later in the stroke, according to the speed.

A spiral splice in the shaft and corresponding groove in the cam will have the same effect.

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

The combination of the independent shafts H G, placed out of line with each other, and connected by a crank-pin, I, and slotted disk K, with the cam F, lever E, rock-shaft D, and cut-off valve, substantially as herein shown, for the purpose set forth.

MARGARET V. HEWES,
Administratrix.

Witnesses:
EDWARD SAYRE,
FREDERICK FISHER.