

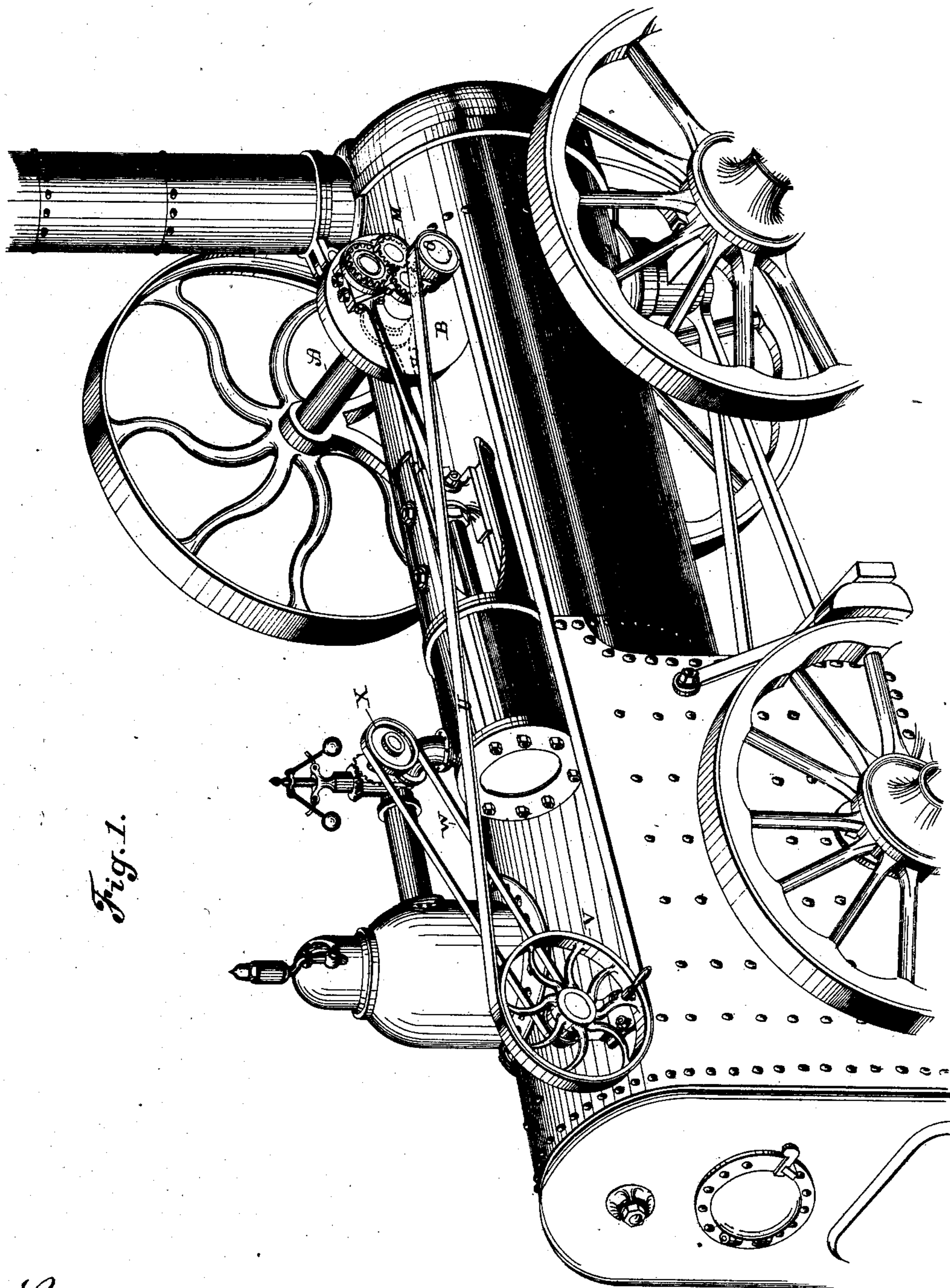
(No Model.)

2 Sheets—Sheet 1.

F. F. LANDIS.
STEAM ENGINE VALVE GEAR.

No. 244,758.

Patented July 26, 1881.



Attest:
Herrn. Lauter.
J. H. Anderson.

Inventor:
Frank. F. Landis.
By H. H. Abbot,
attorney

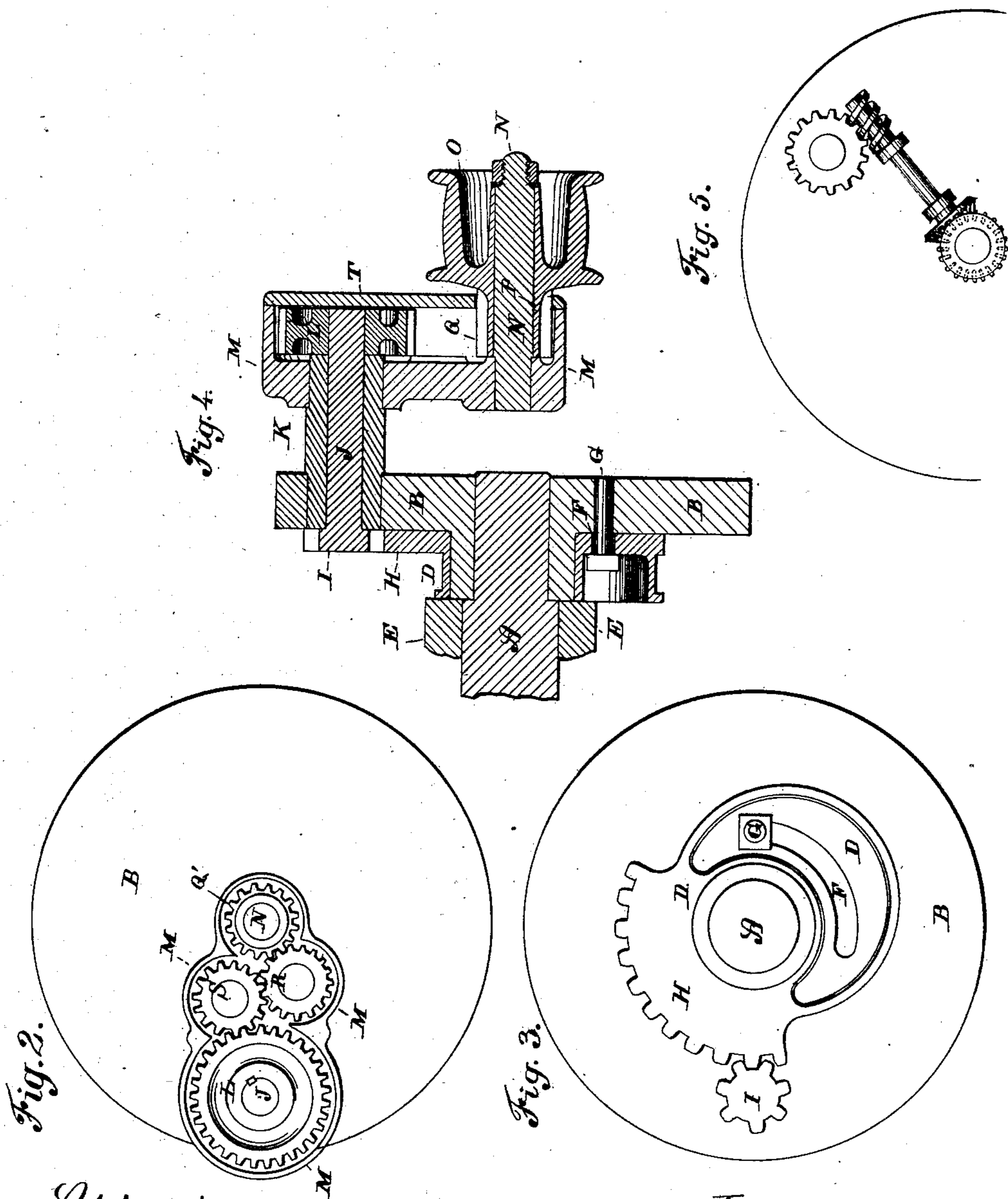
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Herm. Lauten.
(Signature)

Inventor:

Frank F. Landis.

By *(Signature)*
Attorney

UNITED STATES PATENT OFFICE.

FRANK F. LANDIS, OF WAYNESBOROUGH, PENNSYLVANIA.

STEAM-ENGINE VALVE-GEAR.

SPECIFICATION forming part of Letters Patent No. 244,758, dated July 26, 1881.

Application filed February 21, 1881. (No model.)

To all whom it may concern:

Be it known that I, FRANK F. LANDIS, a citizen of the United States, residing at Waynesborough, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Engine Valve-Gears; and I do hereby 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 drawings, and to letters or figures of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a perspective view of my invention applied to a portable or traction engine. Fig. 2 is a side view of the crank-plate, showing the gearing. Fig. 3 is a view of the opposite side of the crank-plate, showing the eccentric and pinion. Fig. 4 is a vertical section through the crank-plate, eccentric, crank-pin, gearing, and stud. Fig. 5 shows a plan view of a modification of my device applicable to heavy engines, in which two bevel-pinions and a worm-shaft are used in lieu of the gearing.

My invention relates more particularly to reversing mechanism for engines; and the object of my improvements is to dispense with the usual link-motion used for reversing the valves of engines, and to substitute devices that consume power only when needed for reversing the valve; and it consists in the construction and operation of parts hereinafter more fully set forth and claimed.

A represents the shaft; B, the crank-plate keyed to the shaft; D, the eccentric, fitting the hub of the crank-plate between the crank-plate and the shaft-bearing E. The eccentric is provided on one side of the shaft with a slot, F, through which a headed pin, G, passes, and is seated in the crank-plate, thereby limiting the circular movement of the eccentric. On the opposite side of the shaft the eccentric is provided with a segmental gear, H, that engages with a pinion, I, whose arbor J passes through the crank-pin K and carries a spur-wheel, L, on its outer end. The crank-pin K is seated in the crank-plate B near its periphery, and outside of the connecting-rod bears a

flanged arm, M, that extends to and covers an extended line of the shaft, leaving room for the connecting-rod to pass. To the lower end of this arm is attached a stud, N, forming an axle, upon which revolves a pulley, O, having at all times an axis coincident with the axis of the crank-plate B. The pulley-wheel O is held upon the stud N by a nut and washer, and has a sleeve, P, extending inward, that carries a spur-wheel, Q, that engages with gear-wheel R, that in turn engages with wheel S, through which connection is made with wheel L. A cover, T, closes down on the flange of the arm M, making a close box, securing the wheels from dust.

A belt, U, leads from the pulley-wheel O to a band-wheel, V, that is keyed to a short shaft that is set in a bracket on the rear end of the boiler, within convenient reach of the driver, and is provided with a handle attached to one of the spokes.

Inside of the bracket on the end of the short shaft is keyed a small band-wheel, X, from which a belt leads to, and communicates motion to, the bevel-gearing of the governor.

The operation of my device is as follows: The machine being in motion, the crank-plate B and pulley-wheel O receive power from the connecting-rod, and revolve around an axis common to both. The pulley-wheel O, giving motion to the belts U W and band-wheels V X, operates the governor. To reverse the motion of the engine, grasp the handle and increase the speed of the band-wheel V. This revolves the pulley-wheel O around the stud, and through the gearing gives motion to arbor J, pinion I, segment H, and revolves the eccentric D ahead of the motion of the engine as far as the pin in the slot F will allow. This movement places the eccentric in the correct position or relation to the crank-pin for the reverse motion of the engine.

Having thus described my invention, I claim—

1. A crank-plate, in combination with a hollow crank-pin and arbor and a pinion, substantially as shown and described.

2. A crank-plate having a hollow crank-pin, in combination with an eccentric, provided with

a segmental gear, a pinion, an arbor, and suitable operating mechanism, substantially as shown and described.

3. A crank-plate having a crank-pin, provided with an arm and stud, in combination with a pulley-wheel and gearing, substantially as shown and described.

4. A pulley-wheel, as O, attached to the crank-plate, and revolving upon the same axis as the shaft, substantially as shown and described.

5. A pulley-wheel, as O, attached to the crank-plate, and revolving upon the same axis,

in combination with suitable mechanism for operating the governor, substantially as shown and described.

6. The pulley-wheel O, in combination with the belt U, band-wheel V, and reverse gearing, substantially as shown and described.

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

FRANK F. LANDIS.

Witnesses:

J. F. OLLER,

A. D. MORGANTHALL.