

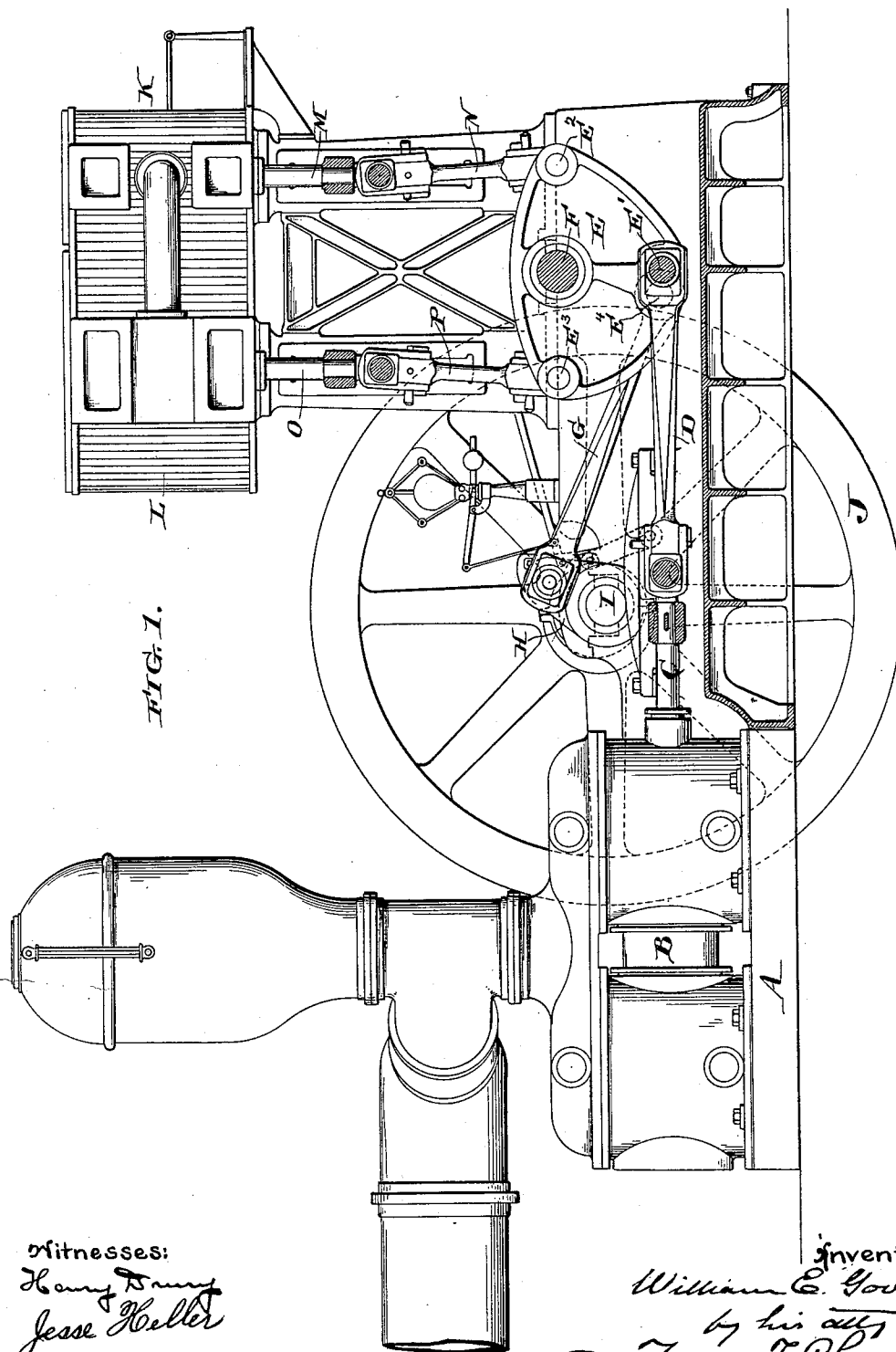
(No Model.)

3 Sheets—Sheet 1.

W. E. GOOD.
PUMPING ENGINE.

No. 469,661.

Patented Feb. 23, 1892.



Witnesses:
Harry D. Dwyer
Jesse Keller

Inventor:
William E. Good
by his atty.
Francis T. Chambers

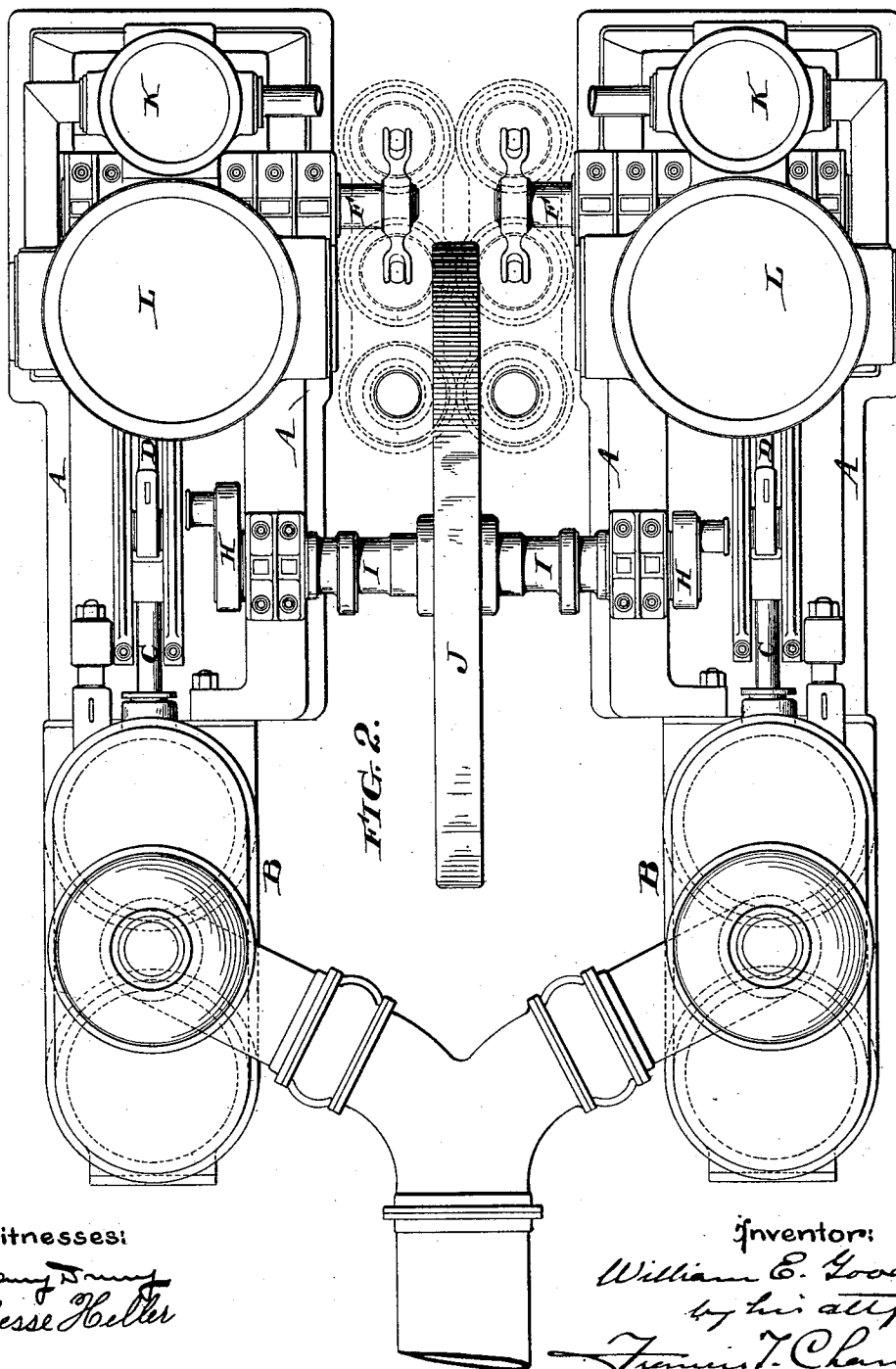
(No Model.)

3 Sheets—Sheet 2.

W. E. GOOD.
PUMPING ENGINE.

No. 469,661.

Patented Feb. 23, 1892.



Witnesses:

Harry D. Smith
Jesse Heller

Inventor:

William E. Good
by his atty.

Frederic T. Chambers

(No Model.)

3 Sheets—Sheet 3.

W. E. GOOD.
PUMPING ENGINE.

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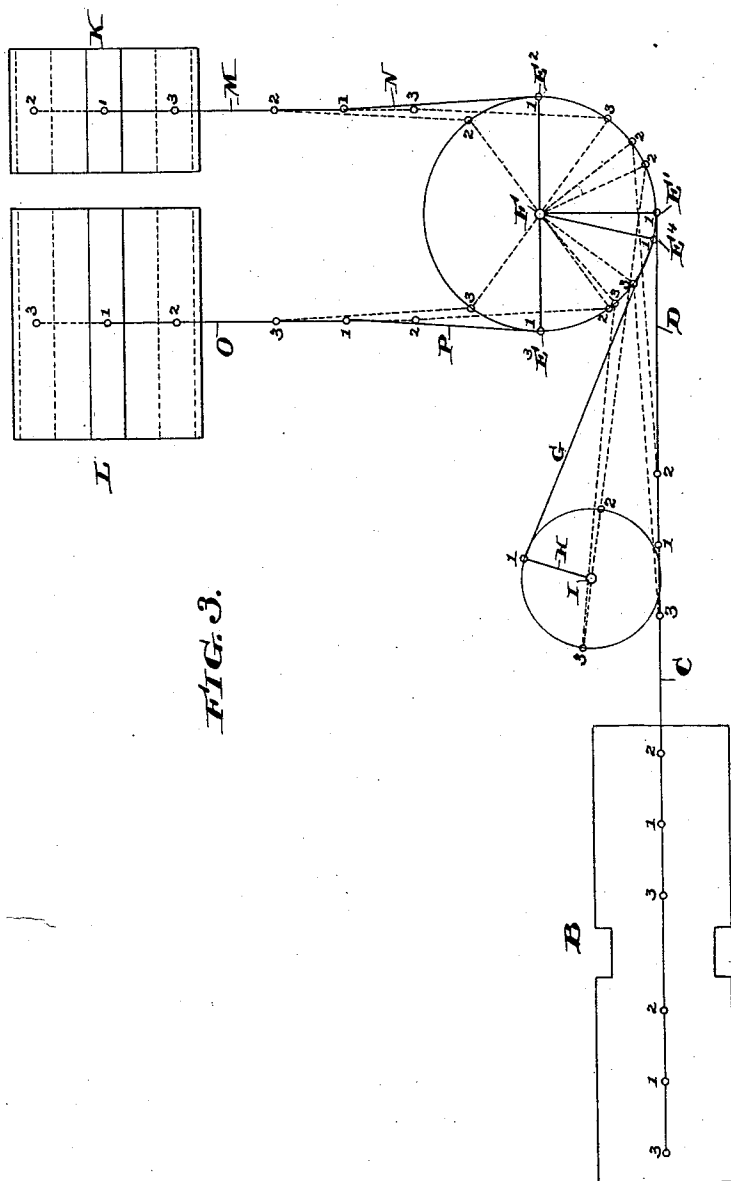


FIG. 3.

Witnesses:

Henry Dunning
Jesse Heller

Inventor:

William E. Good,
by his atty.
James T. Chambers

UNITED STATES PATENT OFFICE.

WILLIAM E. GOOD, OF PHILADELPHIA, PENNSYLVANIA.

PUMPING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 469,661, dated February 23, 1892.

Application filed March 9, 1891. Serial No. 384,205. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. GOOD, of the city and county of Philadelphia, State of Pennsylvania, have invented a certain new and useful Improved Pumping-Engine, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to the construction of pumping-engines; and it consists in a novel combination and arrangement of the parts thereof, whereby the efficiency and the compactness of the engine are both promoted.

The nature of my improvement will be best understood as described in connection with the drawings, which illustrate my invention, and in which—

Figure 1 is a side elevation of the pumping-engine; Fig. 2, a plan view thereof, and Fig. 3 a diagram showing the movements of the important parts.

A indicates the framing of the engine; B and B, pump-cylinders placed parallel to each other.

C C are the piston-rods connecting with plungers in each of the pump-cylinders; D D, the connecting-rods by which the piston-rods C are connected with the beams E, the connection being made at the pumps E'. The beams are secured to shafts F, supported on the framing of the engine, and are provided with journal-pins E² E³, situated on each side of said shaft, and with an additional journal-pin E⁴, by which connection is made through a connecting-rod G with a crank-arm H of a shaft I, extending across the engine between the beams and pump-cylinders, and upon which shaft is secured a fly-wheel J, situated in the space between the pump-cylinders. Above each of the two beams E are situated high and low pressure steam-cylinders K and L, the said cylinders being arranged with their axes parallel and vertical, and the said axes being at a distance apart substantially equal to the mean distance from a vertical plane of the crank-pins E² and E³; or, in other words, the mean distance between planes passing through the crank-pins and moving with them between the points 2 and 3 (see Fig. 3) and the said steam-cylinders are arranged so that their axes will lie above the mean point in the travel of each crank-pin. The piston in cylinder K is connected with the crank-pin E² through the piston-rod M and connect-

ing-rod N, and the piston in cylinder L is connected with pin E³ to the piston-rod O and the connecting-rod P.

The cylinders K and L are firmly secured together and to the framing upon which they are supported, and their axes being determined by the length of the beam E each cylinder is made of or nearly of the maximum diameter permitted by the distance apart of their axes, their relative diameters of course being determined by the ordinary rules governing the construction of compound engines. I have found that by so constructing the engines the maximum efficiency is attained, and attained with the utmost economy of space, which in pumping-engines is usually a matter of considerable importance, and the arrangement of the pump-cylinder actuated by each beam in a horizontal position and at right angles to the steam-cylinders gives, I believe, the most compact and desirable construction of the engine.

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

1. In a pumping-engine, the combination of two pairs of vertically-arranged high and low pressure steam-cylinders having their axes parallel, rocking beams mounted below the cylinders and connected with their piston-rods, a pair of horizontal pump-cylinders whose piston-rods are connected to the beams below their shafts, and a fly-wheel also connected to the beams and mounted in the engine-frame so as to play between the pairs of steam-cylinders and between the pump-cylinders.

2. In a pumping-engine, the combination of two pairs of vertically-arranged high and low pressure steam-cylinders having parallel axes, rocking beams mounted on short shafts below the cylinders and connected with the piston-rods of the cylinders, a pair of horizontally-arranged pumping-cylinders whose piston-rods are connected to the beams below their shafts, and a through-shaft journaled in the engine-frame between the pumping-cylinders and the rocking-beam shafts, said through-shaft carrying a fly-wheel connected to the beams and working between the vertical planes of the pairs of steam-cylinders and between the pumping-cylinders.

W. E. GOOD.

Witnesses:

LEWIS R. DICK,
JOSHUA MATLACK, Jr.