

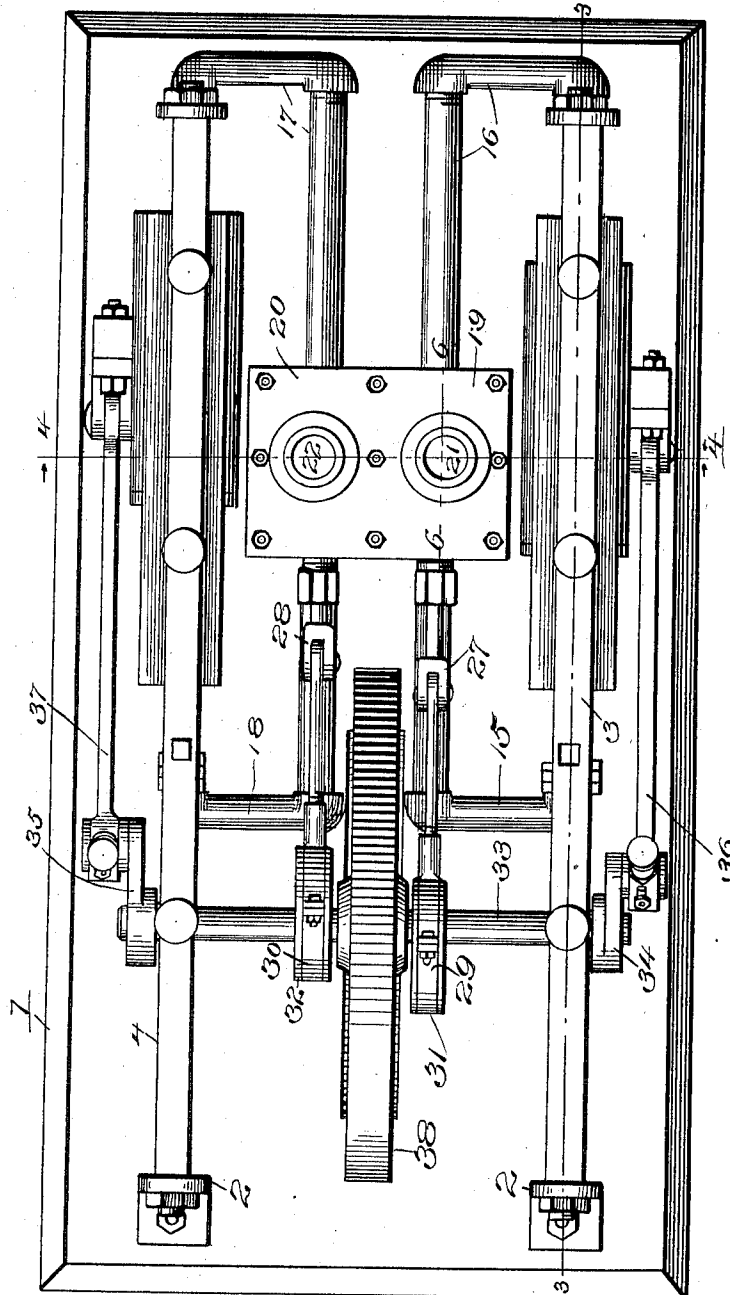
J. M. PARSONS, DEC'D.
M. E. PARSONS, ADMINISTRATRIX.
STEAM ENGINE.

1,036,895.

APPLICATION FILED FEB. 18, 1911.

Patented Aug. 27, 1912.

4 SHEETS—SHEET 1.



Witnesses

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Inventor

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Mary E. Parsons, Administratrix

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Attorneys

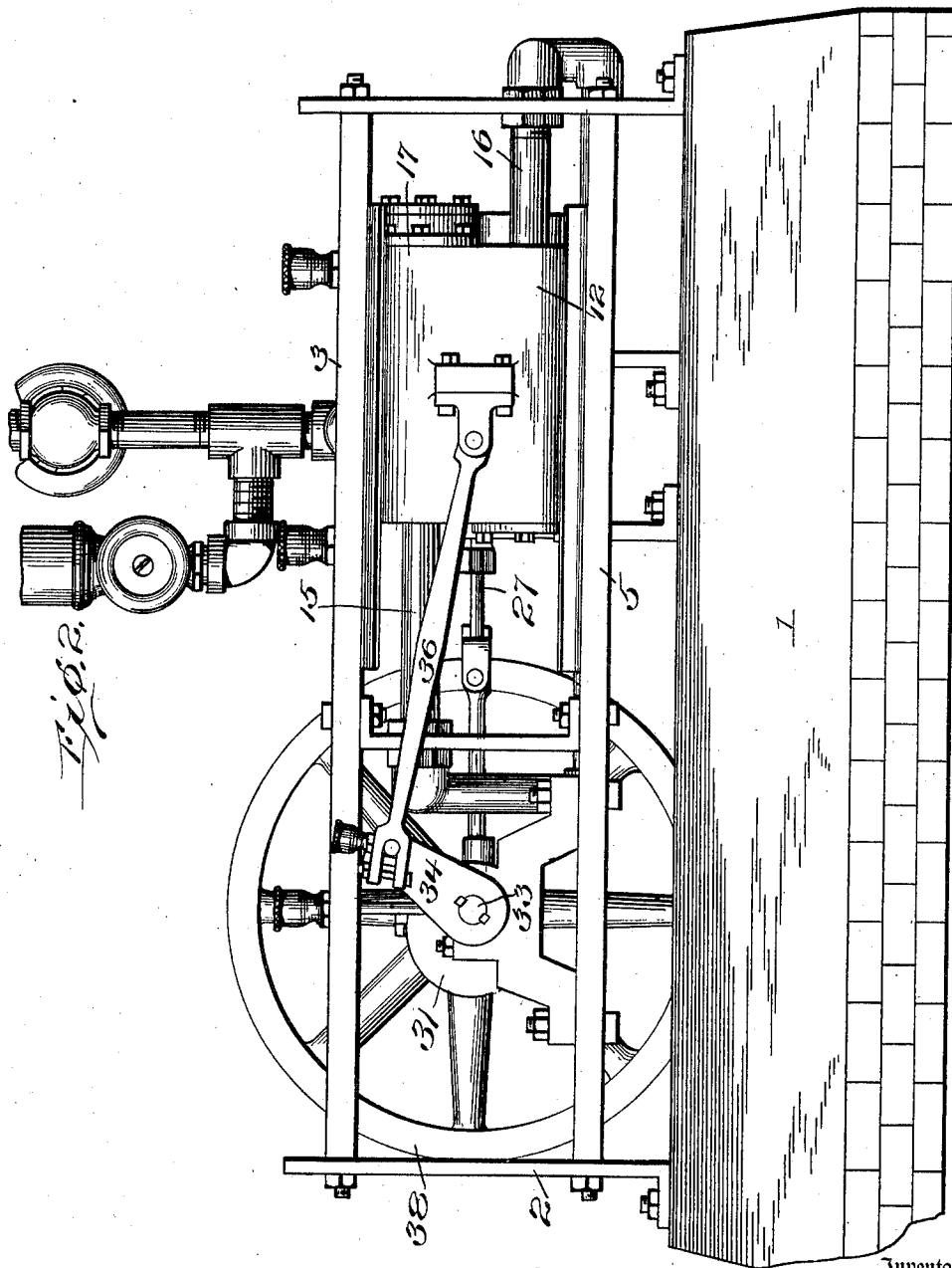
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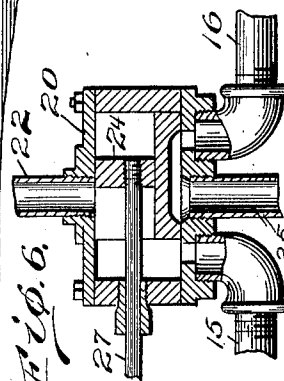
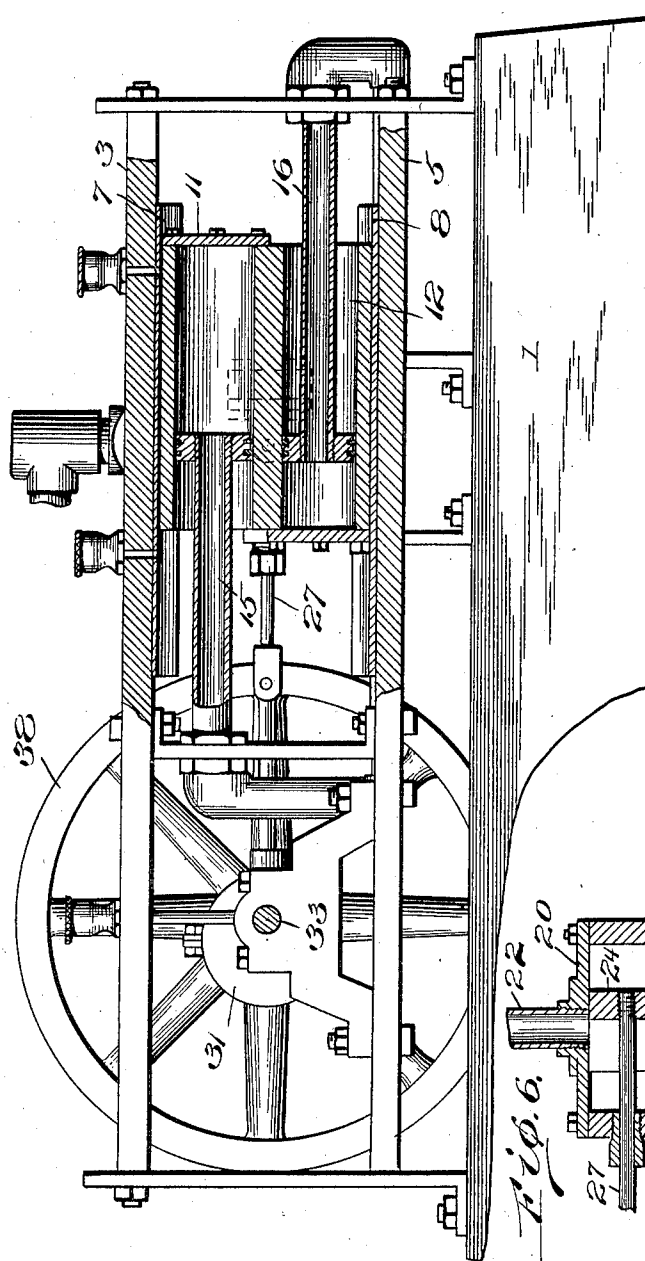
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4 SHEETS—SHEET 3.

Fig. 3.



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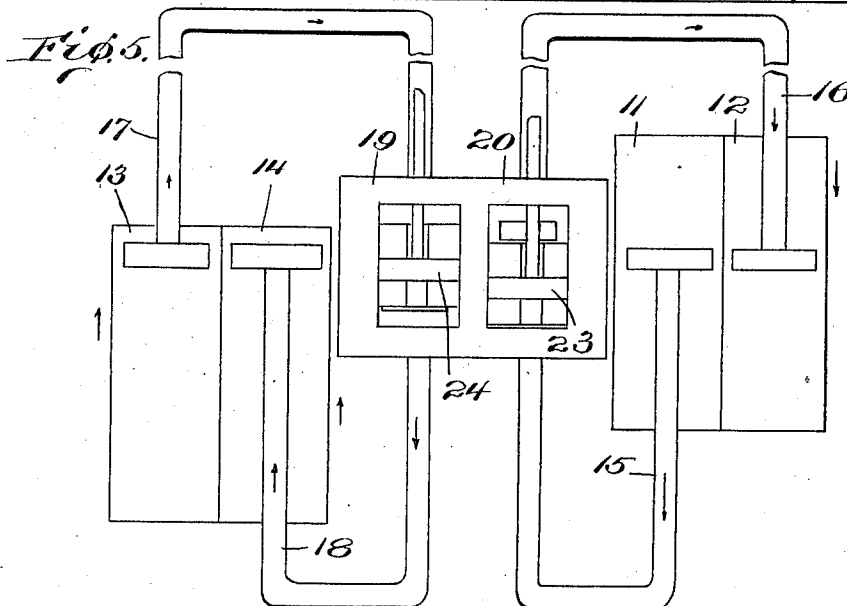
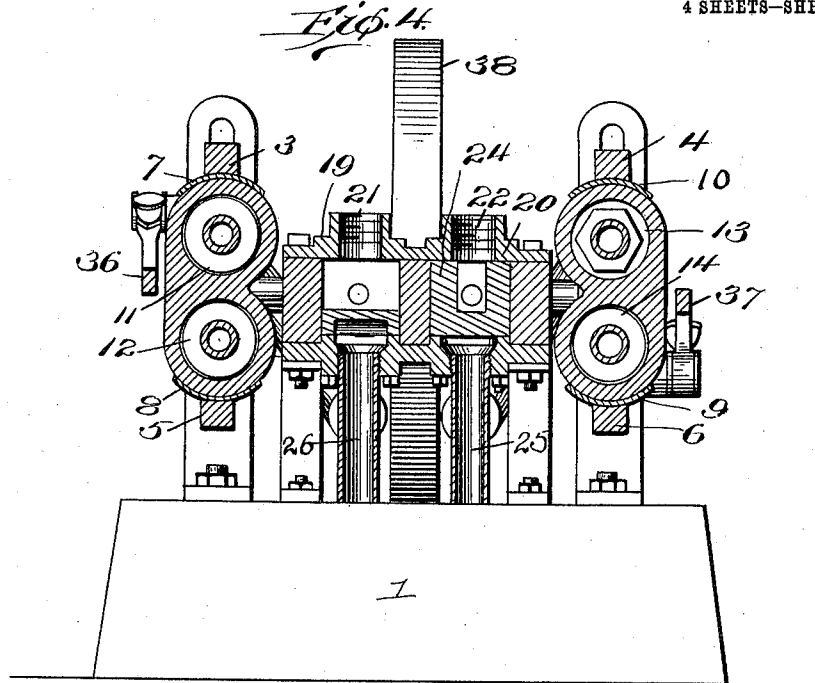
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

JAMES M. PARSONS, DECEASED, LATE OF BALTIMORE, MARYLAND, BY MARY E. PARSONS, ADMINISTRATRIX, OF BALTIMORE, MARYLAND.

STEAM-ENGINE.

1,036,895.

Specification of Letters Patent.

Patented Aug. 27, 1912.

Application filed February 18, 1911. Serial No. 609,528.

To all whom it may concern:

Be it known that JAMES M. PARSONS, deceased, late a citizen of the United States, residing at Baltimore, State of Maryland, did invent certain new and useful Improvements in Steam-Engines, of which the following is a specification.

This invention relates to improvements in steam engines, and particularly to improved piston and cylinder construction and arrangement.

The object in view is the arrangement in a steam engine, of reciprocating cylinders and stationary pistons, associated with co-acting mechanism for securing a maximum power from the engine with a minimum use of steam.

Another object in view is the provision of pistons with hollow piston rods through which the steam is passed into and out of the cylinder, the piston rods being stationary and not requiring the use of packing of any kind.

A further object of the invention is the provision of a plurality of reciprocating cylinders acting in pairs, the cylinders being associated with slide valves arranged to preferably slide simultaneously and in the same direction as the cylinder.

With these and other objects in view the invention comprises certain novel constructions, combinations, and arrangements of parts as will be hereinafter more fully described and claimed.

In the accompanying drawings: Figure 1 is a top plan view of one embodiment of the invention. Fig. 2 is a side elevation of the structure shown in Fig. 1. Fig. 3 is a view similar to Fig. 2, except that a portion is shown in section approximately on line 3—3 of Fig. 1. Fig. 4 is a transverse sectional view through Fig. 1 on line 4—4. Fig. 5 is a diagrammatic view of the engine shown in Fig. 1. Fig. 6 is a detail sectional view on line 6—6 of Fig. 1.

In forming an engine embodying the invention a framework is provided in which is arranged a plurality of cylinders rigidly connected in pairs and adapted to reciprocate in suitable ways or slide bearings. Each pair of these cylinders is connected to a connecting rod or bar which in turn is connected to the wrist pin of a crank arm. The crank arms are connected with a power shaft which carries a power wheel and ec-

centrics, the eccentrics being associated with means which operate steam controlling valves positioned preferably between the cylinders. The steam controlling valves are connected with hollow stationary piston rods having pistons mounted on one end thereof, the cylinder operating over the pistons. By this arrangement steam is admitted into the respective cylinders from stationary piston rods at the proper time for actuating the cylinders.

In order that the invention may be more fully understood an embodiment of the invention is shown in the accompanying drawings, in which—

1 indicates a foundation of any desired kind, on which the framework 2 is mounted. The framework 2 comprises upper and lower bars 3, 4, 5 and 6, and suitable connecting, supporting, and bracing bars. Bars 3 and 5 are each provided with way or slide bearings 7 and 8 respectively, while bars 4 and 6 are provided with similar ways 9 and 10. Arranged to slide or reciprocate in ways 7 and 8 and 9 and 10 are cylinders 11 and 12, and 13 and 14, respectively, the same being rigidly secured together in pairs for operating in that relationship. Each of the cylinders is closed tightly at one end, but entirely open at the opposite end. Each pair of cylinders are arranged so that the open ends thereof extend in opposite directions so as to permit the hollow piston rods 15, 16, 17 and 18 to properly hold their respective pistons in position. By this arrangement one cylinder in each pair will be exhausting while the other is under pressure, so that no fly wheel or momentum is necessary for overcoming dead center, especially as the pistons in one pair of cylinders are set at an angle of less than 180° from the pistons in the other pair of cylinders.

The piston rods are formed hollow and are rigidly secured to suitable bracing members in the framework 2, and from such bracing members extend around to slide valves 19 and 20 for receiving live steam therefrom and discharging exhausted steam therein. The valves 19 and 20 are supplied with steam through openings 21 and 22 from any suitable source (not shown). The movement of slides 23 and 24 cause steam to be alternately admitted into the respective piston rods and alternately exhausted out ports 25 and 26. The slides 23 and 24

are connected with rods 27 and 28 respectively which rods are connected with the bands 29 and 30 mounted on the eccentrics 31 and 32. The eccentrics are rigidly secured to the power shaft 33 and are set for properly operating the slides in timed relationship to the action of the cylinders.

Power shaft 33 is journaled in suitable bearings mounted on bars 5 and 6, and is arranged so the ends thereof extend beyond the bearings for receiving cranks 34 and 35. The cranks carry suitable wrist pins to which one end of the connecting rods 36 and 37 are connected, the opposite end being connected centrally of the respective pairs of cylinders and receives motion therefrom, which motion is transmitted to shaft 33 through the connecting rods, said wrist pins and cranks 34 and 35. A power wheel 38 is secured to shaft 33, from which power may be taken whenever desired.

It will be noted that the cylinders are the moving parts actuated by the steam directly, and that no packing is necessary for the cylinder, piston rods or other parts which are usually packed in several places. The arrangement of cylinders in pairs is also of advantage, as the same admits of the use of a continuous pressure of steam on one of the cylinders of each pair of cylinders. This causes continuous and substantially even motion on the power shaft 33 and associated parts, and substantially obviates all sudden jerks and jars. The valves 19 and 20 may be adjusted to cut off

the steam at any desired time for causing the proper expansion of steam under varying conditions as may be desired.

What I claim is:

In an engine of the class described, a power shaft, a plurality of reciprocating cylinders arranged in pairs, means for connecting each pair of said cylinders with said power shaft for rotating the same, the cylinders of each pair of cylinders having open ends extending in opposite directions, stationary hollow piston rods extending in opposite directions projecting into said cylinders, a piston carried by each of said piston rods, the pistons of one pair being disposed at an angle of less than 180° to the other pair, a valve for each pair of piston rods controlling the entrance of steam therein, and means connecting said power shaft and said valve for operating the valves in proper timed relationship to said cylinders for permitting steam to enter some of said cylinders while exhausting from other of said cylinders.

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

MARY E. ^{her} X PARSONS,
^{mark}

Administratrix of the estate of James M. Parsons, deceased.

Witnesses:

ROBERT W. BEACH,
J. CALVIN MORGAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."