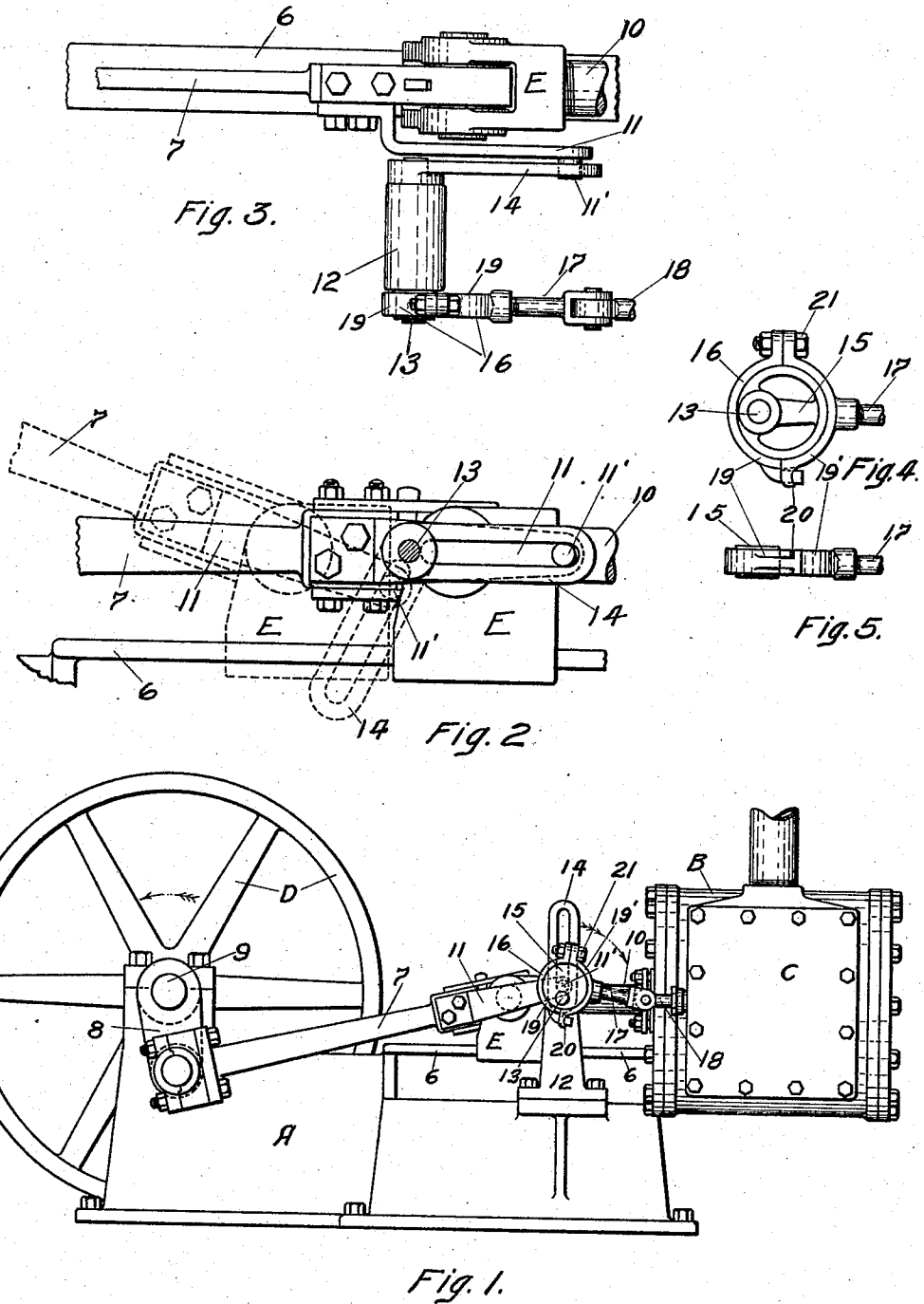


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VALVE GEAR FOR ENGINES.
APPLICATION FILED DEC. 21, 1908.

941,523.

Patented Nov. 30, 1909.



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UNITED STATES PATENT OFFICE.

THEODORE JOLMA, OF PORTLAND, OREGON.

VALVE-GEAR FOR ENGINES.

941,523.

Specification of Letters Patent.

Patented Nov. 30, 1909.

Application filed December 21, 1908. Serial No. 468,557.

To all whom it may concern:

Be it known that I, THEODORE JOLMA, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Valve-Gear for Engines, of which the following is a specification, reference being had to the accompanying drawings.

My invention primarily relates to that class of engines commonly known as donkey engines, which are used to operate a drum for winding and drawing cables to which a weight is attached. The engine, however, may be used for other purposes.

The object of my invention is to provide a slotted cam slide mechanism connecting the pitman with the eccentric mechanism.

I attain these objects and other advantages by the mechanism, construction, combination, and arrangements of parts illustrated in the accompanying drawings, which form a part hereof.

Figure 1 is a side elevation of the engine. Fig. 2 is a side elevation on an enlarged scale, of a part of the machine shown in Fig. 1 with the eccentric and the supporting bearings removed, and showing the sliding cross-head and slotted cam with the adjacent parts of the engine. Fig. 3 is a top plan view of the device as shown in Fig. 2 including the eccentric. Fig. 4 is a side elevation of the eccentric mechanism. Fig. 5 is a bottom view of the same.

Like letters and figures refer to like parts in all the views.

A is the engine frame.

B is a cylinder.

C is a steam or fluid pressure chest.

D is a balance wheel fixedly secured upon the end of a shaft 9 which may be the shaft of a drum for receiving cables for example.

E is a cross-head mounted on a slide 6 and movable horizontally thereon.

A pitman 7 is pivotally mounted at one end in the cross-head E and pivotally mounted at the other end on a crank pin on the crank 8 which latter is fixed upon the end of the shaft 9. A piston rod 10 is secured to the cross-head E and its other end extends into the cylinder B. An arm 11 is fixedly secured at one end to the pitman 7 near its end which is pivoted to the cross-head. This arm 11 is in alinement with the pitman and has a rigid pin 11' on its free end at right angles to it which pin extends through a slotted cam 14 and moves the

same. A standard 12 is secured vertically upon the frame A and within the same a rotatable shaft 13 is mounted horizontally transversely to the line of movement of the pitman. The slotted cam 14 is secured at one end upon the inner end of the shaft 13, the opposite end of the cam being free.

An eccentric 15 is rigidly secured upon the shaft 13. Surrounding the eccentric 15 is an eccentric strap 16 which has a pitman 17 secured at one end to said strap, its other end being pivotally secured to the outer end of a valve stem 18, the opposite end of which valve stem extends into the steam chest C. The eccentric strap is formed of two members 19—19'. These members are hinged together at their lower ends by a hinge 20 and at the upper ends they are secured to each other in position about the eccentric 15 by means of a bolt 21.

It will now be seen that upon the application of power by means of fluid pressure within the steam chest, the piston rod 10 is caused to move outwardly and inwardly and to actuate the remaining mechanism of the engine.

By the arrangements of parts as shown it is possible in this engine to place the eccentric mechanism near the other working parts immediately appropriated to the transmission of the power and away from the balanced wheel D or drums or other machinery connected therewith which may cause accidental damage by their displacement, breaking or reception of foreign objects therein. The arrangement also permits of better and more convenient attention to the working parts by the operator. The hinging of the eccentric strap also allows a quick and easy adjustment and removal of the same from the eccentric. The arrows in Fig. 1 indicate the direction of movement of the cam 14 and wheel D respectively as there illustrated. In Fig. 2 the full lines show the pitman, cross-head etc. in the positions which they occupy when the piston is at the end of its inward stroke, and the dotted lines show the same parts in the positions which they occupy when the piston is approximately at the middle of its outward stroke.

Having thus described my invention I now claim:

1. A valve-gear for engines having mechanism comprising a cross-head E mounted on a slide 6 and pivotally connected with a

piston rod 10 and a pitman 7, an arm 11 having one free end, its opposite end being fixedly secured to the pitman 7, said arm extending from the cross-head end of the
5 pitman beyond its pivot center in the cross-head, the arm 11 also having on its free end at right angles thereto a pin 11' which extends through a slotted cam 14 in sliding engagement therewith, also a slotted cam
10 14 having one free end, and secured at its opposite end upon the end of a shaft 13 which is provided with a rigid eccentric mounted at one side of and transversely to the traveling plane of the said pitman, sub-
15 stantially as described.

2. In a valve-gear for engines, the combination with a pitman pivoted to a cross-head and extending beyond its pivot on said cross-head to the side thereof remote from its shaft connection, of an arm mounted 20 on a valve operating shaft whose axis is transverse to the plane of motion of said pitman, and an element carried by the extended portion of said pitman which is in sliding engagement with said arm, substan- 25 tially as described.

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Witnesses:

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