(No Model.)

H. VINEYARD.

REVERSING VALVE FOR ENGINES.

No. 423,194. Patented Mar. 11, 1890.

Fig. 2.

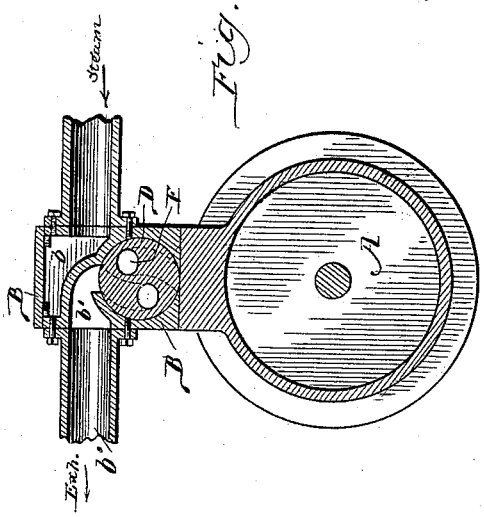


Fig. 1.

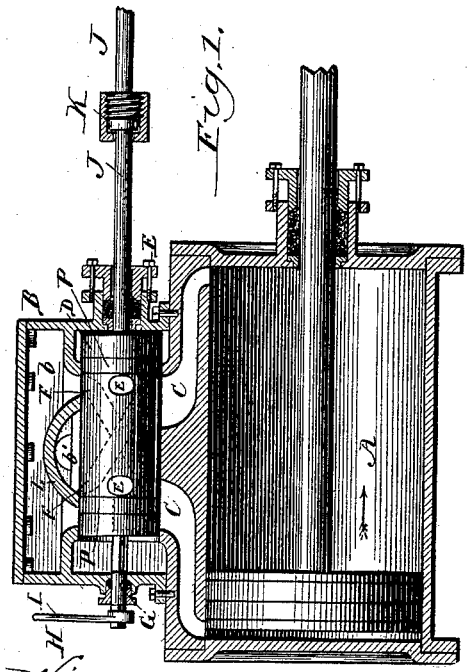
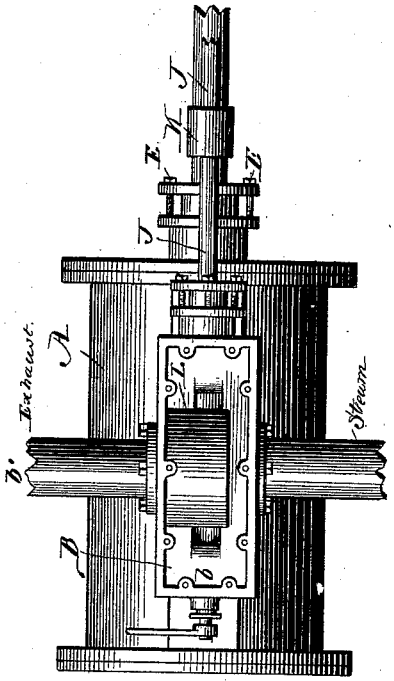


Fig. 3.



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HUBER VINEYARD, OF FLORENCE, MONTANA.

REVERSING-VALVE FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 423,194, dated March 11, 1890.

Application filed March 28, 1889. Serial No. 305,104. (No model.)

To all whom it may concern:

Be it known that I, HUBER VINEYARD, of Florence, in the county of Missoula, State of Montana, have invented certain new and useful Improvements in Reversing-Valves for Engines, of which the following is a specification.

The object of my invention is to provide means for reversing a steam or other engine without the use of link motion or other device involving the use of more than one eccentric and without involving the necessity of otherwise changing the motion of the valve as derived from the eccentric.

My invention consists, mainly, in providing different sets of passages or ports so arranged as that steam or other motive fluid may be directed to one or the other end of the cylinder by bringing into use one or the other set of ports or passages.

It further consists in the parts and combinations hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal section of a cylinder and valve-chest in which my invention is embodied. Fig. 2 is a central cross-section, and Fig. 3 is a plan view, of the same.

A is the cylinder; B, the valve-chest.

C C are the cylinder-ports, leading from the valve-chest to the cylinder.

D is the valve regulating the admission and exhaust of steam or other motive fluid to and from the cylinder, and is reciprocated by an eccentric or equivalent device in any well-known manner.

As shown, the valve D is cylindrical or belongs to the class known as "piston-valves." The said valve D contains two sets of ports E E and F F, the latter being shown in dotted lines in Fig. 1, and appearing, also, in the section of the valve shown in Fig. 2. The ports E E, I call "direct ports," because when in operation they lead steam directly into the nearest end of the cylinder. The passages F F cross each other, and when in operation lead steam into the end of the cylinder most distant from the point of its admission, and I therefore designate them as "cross" ports or passages. As shown, these direct and cross ports pass through the valve D in a plane at right angles to each other, or approximately so, so that a revolution of the valve D through an angle of ninety degrees brings the openings of one or the other set of ports to register with the cylinder-ports C C.

Various means may be employed for rotating the valve D; but a preferred mode is shown in the drawings. It consists of a stud G, projecting through the side of the steam-chest and in axial line with the valve D. It is provided on the outside with a handle H, which may be partially rotated, a catch I being provided for retaining it in position. The inner end of the stud G may be square or provided with a feather and fits a corresponding hole in the valve D, so that the valve may move endwise on the stud, but is compelled to turn with it. Thus by moving the handle H the valve D may be rotated, so as to bring either the ports F or the ports E into operation. In order to permit this rotation, the valve-stem J is made in two parts, which are joined by a swivel-joint, as K, of any suitable description.

The construction of the steam-chest B is plainly shown as to its upper part in the figures. Steam is admitted to the part *b*, and a division-wall L separates the exhaust-opening *b'* from the part *b*.

To prevent leakage, packing-rings P P P may be inserted in the valve D on each side of the port-openings E E and F F, as shown.

The operation is as follows: When the valve D is in the position shown in Figs. 1 and 2, the cross-ports are in operation, the direct ports being not in communication either with the steam-chest ports or the cylinder-ports, and with the valve in the position shown in Fig. 1 steam is entering the right-hand port F and being discharged into the left-hand port C, while the steam is being exhausted from the right-hand port C, and the effect is to move the piston in the direction of the arrow. If, however, the valve D were rotated a quarter-turn, the direct ports E E would then become operative and steam would pass from the valve-chest opening to the right-hand cylinder-port C and steam would be exhausted from the left-hand cylinder-port C, the result being to drive the piston in the opposite direction, and therefore reverse the engine.

I claim—

The combination, with the cylinder-ports of an engine, of a piston-valve containing direct ports and crossed ports, a valve-chest having inlet and exhaust openings, mechanism for reciprocating said valve, whereby the motor-fluid is admitted to and exhausted from the cylinder, and mechanism for rotating it, whereby either the straight or crossed ports are brought into action and the direction of revolution of the engine controlled, essentially as described.

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Witnesses:

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