UNITED STATES PATENT OFFICE.

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VALVE MECHANISM FOR ENGINES.


To all whom it may concern:

Be it known that I, Ernest A. Moore, a subject of Great Britain, residing in Joliet, in the county of Will and State of Illinois, have invented a new and useful Improvement in Valve Mechanism for Engines, of which the following is a specification.

This invention is an improved means of operating Corliss valves on the releasing principle at high speeds.

My object has been to devise a valve gear in which the latching action will be accomplished at the highest speeds, without the use of any spring, roller, or guide, or any other mechanical device, thereby reducing wear and eliminating practically all noise in operation; and at the same time to make a simple and accessible arrangement of parts.

The invention is found in the mechanism described below, and is illustrated also in the accompanying drawing in which latter Figure 1 is a partial elevation of a Corliss engine provided with my improved gearing. Fig. 2 is a front elevation and Fig. 3 is an end elevation of the valve gear, and Fig. 4 is a section on the line 4-4 of Fig. 3.

In said drawing 5 represents the cylinder of the engine, and 6, 6 are the dash pots and 7, 7 the drop rods operating the same. The usual wrist plate is shown at 8, and is connected to the dash pot mechanism by rods 9. The dash pot lever 10 of Figs. 2 and 3 is in the form of a bell crank and is keyed to the stem 11 of the valve controlled by the dash pot, one arm of the lever carrying the dash pot rod 7 and the other arm carrying the catch block 12. The steam arm 13 is provided with a stop for the catch block at 14 and is joined to and operated by the wrist plate connection 9, or any other source of reciprocating motion. Mounted in the steam arm is the latch shaft 15 on the inner end of which is secured the knock off bar 16 which is an arm rising out from the shaft and which is provided with a weighted lower end 17. A latch 18 also is mounted on the shaft 15 and extends laterally from the shaft as shown and is adapted to engage the catch block. The parts 15 and 17 may be and preferably are in one piece. A ring 18 extends around the bonnet and carries a knock off block 19 located where it will contact with the arm 16, and said ring also carries the safety cam 20 intended to come into operation in the event of any mishap to the governor of the engine. The ring 18 is controlled by the governor, not shown, in the usual manner by means of the rod 21.

The operation of the mechanism is as follows: In opening the valve, the rod 9 moves to the left, and the latch 17 engages with the catch block, and continues so engaged until the bar 16 encounters the knock off block 19. This contact causes a rising of the latch 17 and the release of the catch block. The dash pot then comes into action and the lever 10 returns the catch block to its original position. The latch shaft and the knock off bar are so constructed and balanced that the inertia due to the motion and the gravity of the parts cause an automatic reengaging by the latch with the catch block at the end of the return stroke, without the use of any roller spring, guide, or other mechanical device.

The depth of the latch and the amount of clearance given the latch blocks may be adjusted by the two screws 24 while the mechanism is working.

From the drawing it will be noted that the 80 knock-off bar 16 and latch 17 are positioned on opposite sides of the shaft 15, so that when the latch 17 engages the catch block 12, the forces acting on the latch 17 always tend to hold the knock-off bar 16 in engagement with the knock-off cam 19, thereby preventing any premature disengagement of the latch 17 and catch block 12.

I claim:

1. In a valve gear, in combination; a drop rod; a lever to which said drop rod is connected, said lever being secured to the valve stem and having a catch block thereon; a steam arm having a latch shaft pivotally mounted thereon; a latch carried by said shaft and adapted to engage with said catch block; a knock-off bar secured to said shaft; a governor-controlled knock-off cam for operating said knock-off bar, the knock-off bar and latch being so arranged that the forces 100
on the latch, when acting against the catch, will positively hold the knock-off bar against said knock-off cam, substantially as specified.

2. A valve mechanism comprising a catch block, a freely movable shaft, said shaft being provided with a latch adapted to engage and cooperate with the catch block, said shaft and latch being gravity operated to automatically cause the engagement of the catch block and latch, and means for adjusting the amount of oscillation of said shaft.

ERNEST A. MOORE.

Witnesses:
August Beitzner, Jr.,
John K. Bush.

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