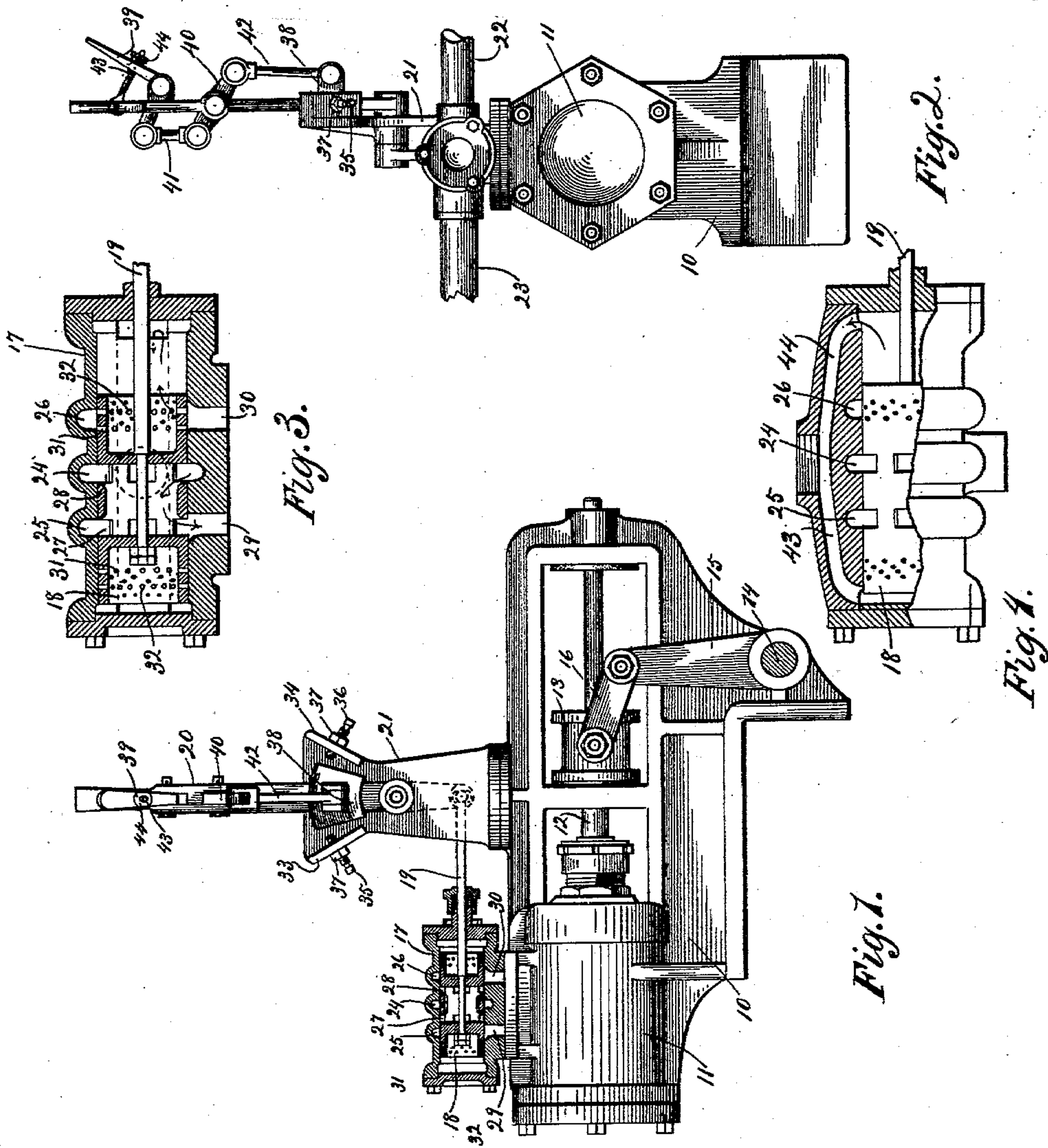


No. 745,520.

PATENTED DEC. 1, 1903.

DE WITT C. PRESCOTT.
VALVE FOR STEAM ENGINES.
APPLICATION FILED JUNE 12, 1903.

NO MODEL.



WITNESSES:
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VALVE FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 745,520, dated December 1, 1903.

Application filed June 12, 1903. Serial No. 161,143. (No model.)

To all whom it may concern:

Be it known that I, DE WITT C. PRESCOTT, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Valves for Steam-Engines, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

10 This invention relates to that type of reciprocating steam-engine in which the piston moves between positive stops and in which there is no automatic reversing-valve.

15 The object of the invention is to provide for the retardation of the engine by restricting its exhaust while allowing a full head of steam for driving it, and particularly to provide adjustable means for varying the restriction of the exhaust to adapt the engine
20 to the load.

The invention consists in a piston-valve having a lap at each end of sufficient length to always cover the exhaust-port, such lap being provided with a series of apertures, so
25 that there may be a graduated opening of the exhaust-port of the cylinder; and it consists, further, in a novel adjustable stop mechanism for variably limiting the throw of the valve.

30 In the accompanying drawings, Figure 1 is a side elevation of the engine, the valve-casing being shown in longitudinal vertical central section. Fig. 2 is an end elevation of the engine. Fig. 3 is a detail of the valve, and Fig. 4 is a detail of the valve-casing.

35 There is shown at 10 a base for the engine, such as to adapt it for mounting upon a saw-mill-carriage; at 11, the engine-cylinder; at 12, its piston-rod; at 13, its cross-head; at 14, a rocker-shaft; at 15, a crank-arm fixed to the rocker-shaft; at 16, a link connecting the cross-head with the crank-arm; at 17, the valve-casing; at 18, the cylinder-valve; at 19, the valve-stem; at 20, the valve-lever, and
40 at 21 the bracket upon which the valve-lever is pivoted and which rises from the base 10.

45 Steam enters the valve-casing through the pipe 22, and the exhaust is led therefrom through the pipe 23. The induction-pipe
50 communicates with the steam-port 24, which

is at the middle of the valve-casing, and the exhaust-pipe communicates with the ends of the valve-casing through the passages 43 44.

The valve 18 is provided with a central chamber having ports 27 28 at each end thereof, which are adapted to register alternately
55 with the cylinder-ports 29 30. The end laps of the valve are prolonged, so that they never fully uncover the cylinder-ports to the exhaust-ports of the valve-casing. These laps
60 are apertured, as shown at 31 32, the former series of apertures coming first into registry with the cylinder-ports and not being of sufficient area in the aggregate to fully open the
65 same, so that they provide but a restricted exhaust, the latter series of apertures also coming into registry with the cylinder-ports when the valve is still further moved, so that
70 a more free exhaust is permitted. The steam-ports 27 28 of the valve are sufficiently large, so that as soon as they come into registry with the cylinder-ports a full head of steam is provided.

The valve-lever moves between positive stops 33 34, which are shown as flanges formed
75 on the bracket 21, to which the lever is pivoted, and adjustable stops are provided in the form of bolts 35 36, which set through these flanges, each bolt being provided with a jam-nut 37 for locking it in its adjusted po-
80 sition.

A slide-block 38 is mounted upon the valve-lever and is tapering or wedge-shaped and serves as the abutment for contacting with the stop-bolts 35 36. The block 38 is moved
85 by means of a bell-crank 39, pivoted to the valve-lever, one arm of this bell-crank constituting a handpiece and the other arm thereof being attached to the block through the medium of a rock-bar 40, pivoted to the valve-
90 lever, and the links 41 42, respectively connecting the bell-crank with the rock-bar 40 and the latter with the block 38.

By moving the block 38 longitudinally upon the valve-lever the throw of the valve is de-
95 termined, it having a longer range of movement if the block is elevated than when lowered, so that if the engine is required to carry a heavy load the operator merely raises the block so as to open the exhaust-ports more
100

widely, while if the load be light he lowers the block, and thus provides for a restricted opening of the exhaust-ports.

5 Preferably an adjustable stop is provided to limit the downward movement of the block 38, so that there may under all circumstances be some movement of the valve. Such a stop is shown in the form of a threaded rod, 10 pivotally attached to the upper end of the valve-lever and projecting through a suitable aperture in the hand member of the bell-crank 39 and carrying at its outer end a milled nut.

I claim as my invention—

15 1. In a steam-engine, in combination, a cylinder having ports leading to each of its ends, a valve-chest with which such ports communicate and having induction and exhaust ports, a valve having graduated exhaust-con- 20 trolling ports, a valve-controlling lever, positive stops limiting the range of the lever throw, and a slide-block carried by the lever and having inclined faces coöperating with the stops.

25 2. In a steam-engine, in combination, a cyl-

inder having ports leading to each of its ends, a valve-chest with which such ports commu- 30 nicate and having induction and exhaust ports, a valve having graduated exhaust-controlling ports, a valve-controlling lever, positive stops limiting the range of the lever throw, a slide-block carried by the lever and having inclined faces coöperating with the stops, and a bell-crank pivoted on the lever 35 and operatively connected with the block.

3. In a steam-engine, in combination, a cyl- 40 inder having ports leading to each of its ends, a valve-chest with which such ports communicate and having induction and exhaust ports, a valve having graduated exhaust-controlling ports, a valve-controlling lever, ad- justable positive stops limiting the range of the lever throw, and a slide-block carried by the lever and having inclined faces coöper- 45 ating with the stops.

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Witnesses:

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