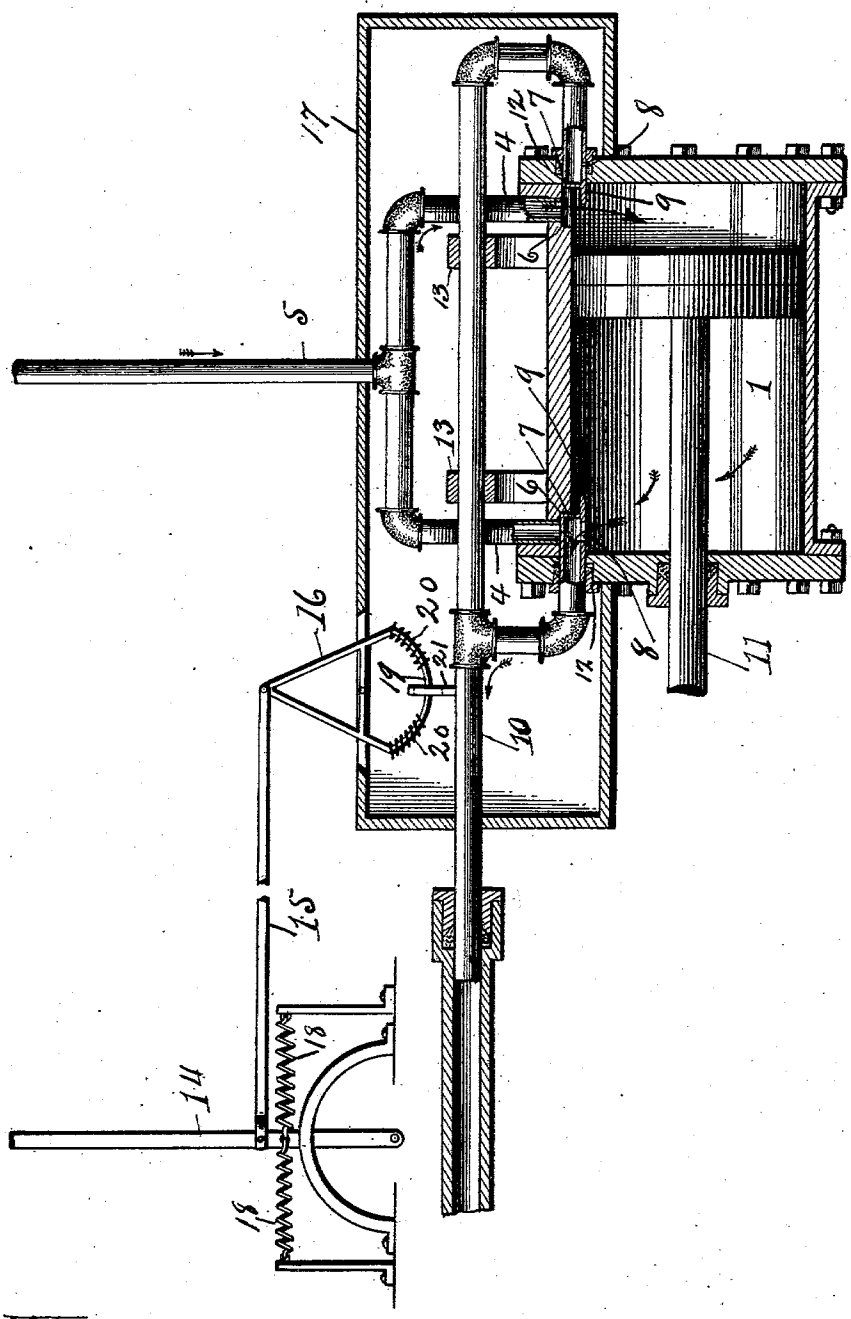
No. 629,822. Patented Aug. 1, 1899.

A. SHELBURNE.

VALVE MECHANISM.

(Application filed Mar. 28, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

AUGUSTINE SHELBURNE, OF NEW LONDON, MISSOURI.

VALVE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 629,822, dated August 1, 1899.

Application filed March 28, 1899. Serial No. 710,758. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTINE SHELBURNE, a citizen of the United States of America, residing at New London, in the county of Ralls and State of Missouri, have invented certain new and useful Improvements in Steam-Cylinders and Valve Mechanism, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to cylinders for steam-engines; and it has for its object to provide novel mechanism whereby the expensive steam-chest now in use is discarded and a less complicated structure is substituted.

A further object of the invention is to provide a steam-cylinder in which the steam is admitted to either end of the cylinder through ports which are opened and closed by reason of the contact of the piston with tappets projecting into the cylinder through the heads at the front and back.

A further object of the invention is the provision of novel means whereby the mechanism which operates to open the steam-port at one end causes the port of the exhaust-pipe at the opposite end to register with the interior of the cylinder, and vice versa.

Finally, the object of the invention is to provide a steam-cylinder and valve mechanism which will be strong and durable, efficient and satisfactory in use, while at the same time it will prove comparatively inexpensive to produce and sustain.

With the above and other objects in view the invention consists in the novel details of construction and in the arrangement and combination of parts to be hereinafter more fully set forth in the annexed claims.

In describing the invention in detail reference will be had to the accompanying drawing, forming part of this specification, wherein like characters denote corresponding parts and in which the figure is a longitudinal vertical sectional view of a cylinder and controlling means embodying the invention.

In the drawing, 1 denotes the cylinder, 2 the front head, and 3 the back head. The top of the cylinder at each end is fitted with branch steam-pipes 4 4, which are connected with the main steam-pipe 5, leading to the steam-generator.

The cylinder is provided with shoulders 6 just below the lower end of the steam-pipes, which act as stops to limit the throw of the slide-valves 7 7. The valves for closing the steam-ports are produced by having the upper surfaces of the exhaust-pipes arranged to fit closely against the shoulders 6 as said exhaust-pipes are shifted longitudinally of the cylinder.

Exhaust-ports 8 8, one each in the lower surface of the closed end of the exhaust-pipe, are sealed by the heads of the cylinder alternately—that is, when the steam-port is open at one end the exhaust-port at that end is sealed by being drawn into and embraced by the cylinder-head and when the steam-port is open and the exhaust-port is closed or sealed at one end the steam-port is closed and the exhaust-port is open at the opposite end.

The exhaust-pipes have on their extremities tappets 9, which project into the cylinder and against which the piston alternately abuts in order to shift the valves and ports. The manner in which this is accomplished will be seen from the drawing and the foregoing description.

The exhaust-pipe heretofore described has its end 10 embraced by a stationary extension, it being understood that a packing-box is provided to prevent escape and leakage. Packing-boxes are also provided for the piston-rod 11 and for the cylinder-heads at 12 12 for obvious reasons. Brackets 13 project upwardly from the cylinder for supporting the exhaust-pipe and are provided with apertures through which the upper portion of the exhaust-pipe is slidable.

The reverse-lever 14 and reach-rod 15 are provided, said reach-rod being connected with the triangular plate 16 of the housing 17, the said housing being so formed as to incase the exhaust-pipe, supports, &c. Springs 18 exert a pressure on the reverse-lever in opposite directions, so that it is normally in a vertical position. The plate 16 is provided with a segmental rod 19, with springs 20 encircling it at each end, and this rod works through an aperture of the lug 21 in such a manner as to allow the springs to abut the lug when it is desired to shift the exhaust-pipe for the purpose of reversing the stroke of the piston.

The construction, operation, and advan-

tages will, it is thought, be understood from the foregoing description, and it will be noted that various changes may be made in the proportions and other details of construction without departing from the spirit of the invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A cylinder provided with ports adapted to alternately admit steam at either end thereof, valves for controlling the ports, said cylinder also being provided with an exhaust-pipe having ports alternately closed by the heads of said cylinder, and tappets actuated by the piston-head for operating the valves, substantially as described.

2. In combination with a cylinder provided with shoulders, the exhaust-pipes, the end of exhaust-pipe acting as a slide-valve for the steam-ports abutting the shoulders, the lower surface of the exhaust-pipes being provided with ports, which are alternately sealed by the cylinder-heads, and tappets on the ends of the exhaust-pipe adapted to be alternately engaged by the piston-head, substantially as described.

3. In combination with a cylinder having shoulders, a movable exhaust-pipe also forming the inlet-valves whereby steam is alternately admitted and exhausted at both ends of said cylinder, tappets actuated by the piston-head, steam and exhaust pipes at both ends of said cylinder, and upwardly-extending brackets for supporting the exhaust-pipe, said brackets having apertures through which the upper portion of the exhaust-pipe is slidable, substantially as described.

4. In combination with a cylinder provided with shoulders, said shoulders being adapted to receive the end of the exhaust-pipe, said end of exhaust-pipe acting as a slide-valve for the steam-port, the lower surface of the exhaust-pipes being provided with ports, which are alternately sealed by the cylinder-heads, and tappets on the ends of the exhaust-pipe adapted to be alternately engaged by the piston-head, brackets on the cylinder for supporting the exhaust-pipe, and a stationary exhaust-pipe arranged to receive the end of the movable exhaust-pipe, substantially as described.

5. In combination with a cylinder, a movable exhaust-pipe also forming the inlet-valves whereby steam is alternately admitted and exhausted at both ends of said cylinder, the cylinder having shoulders, tappets actuated by the piston-head, steam and exhaust pipes at both ends of said cylinder, and upwardly-extending brackets for supporting the exhaust-pipe, said brackets having apertures through which the upper portion of the exhaust-pipe is slidable, and means for reversing the stroke of the piston, substantially as described.

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

AUGUSTINE SHELBURNE.

Witnesses:
THOMAS WALLACE,
DAVID WALLACE.