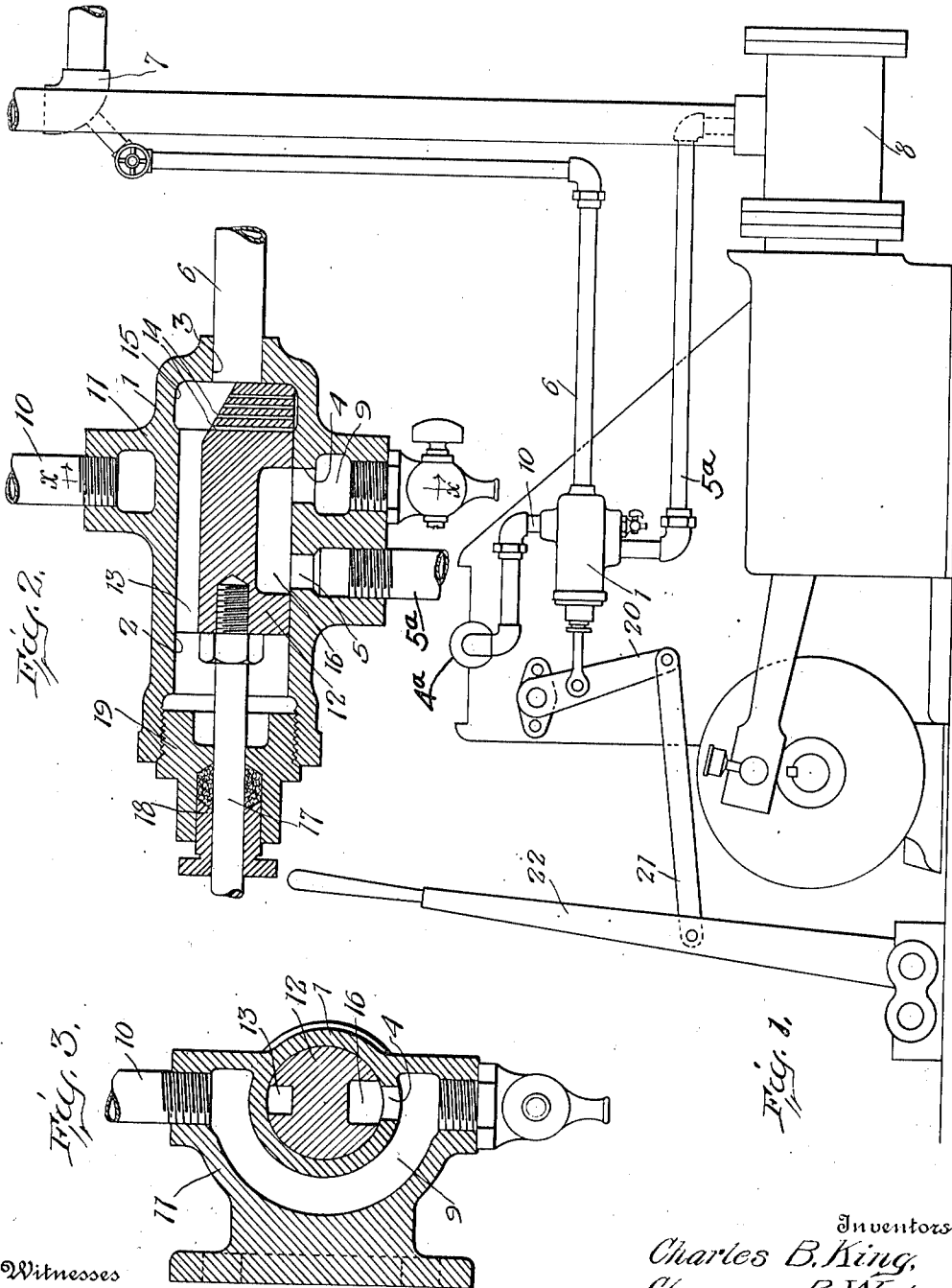


C. B. KING & C. B. WESTON.
CONTROLLING VALVE.
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1,063,975.

Patented June 10, 1913.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES B. KING AND CLARENCE B. WESTON, OF MARION, OHIO, ASSIGNORS TO THE
MARION STEAM SHOVEL COMPANY, OF MARION, OHIO, A CORPORATION OF OHIO.

CONTROLLING-VALVE.

1,063,975.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed September 24, 1910. Serial No. 583,646.

To all whom it may concern:

Be it known that we, CHARLES B. KING and CLARENCE B. WESTON, citizens of the United States, residing at Marion, in the

5 county of Marion and State of Ohio, have invented certain new and useful Improvements in Controlling-Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to controlling valves for steam driven mechanism and the object of the invention is to provide a controlling valve which will be retained in its adjusted positions by steam pressure; and

15 further, to provide such a valve which will be positive in its operation and simple in its construction, involving a minimum number of parts and having these parts of such a character and so arranged that they will not

20 be easily broken or disarranged.

In the accompanying drawings Figure 1 is a side elevation of a valve embodying our invention, showing its connection with the several operating parts; Fig. 2 is a longitudinal sectional view, taken vertically

25 through such a valve; and Fig. 3 is a transverse sectional view, taken on the line *x x* of Fig. 2.

In these drawings we have illustrated one

30 embodiment of our invention and have shown the same in the form in which it is applied to a brake-operating mechanism. In this form the invention comprises a casing 1 having a longitudinal bore or valve

35 chamber 2. This valve chamber is provided with an inlet port 3 connected with a suitable source of steam supply, an outlet port 4 connected with a brake-operating cylinder 4^a, and an exhaust port 5 having connected

40 thereto an exhaust pipe 5^a. The inlet port 3 is preferably arranged centrally of one of the end walls of the casing 1, and in the construction here shown the end wall having the inlet port is formed integral with the

45 body of the casing. This inlet port is connected by means of a pipe 6 with a steam supply pipe 7 for an engine 8. The outlet port 4 is connected by a suitable conduit 9 with a pipe 10 leading to the cylinder. This

50 conduit is preferably formed in the body of the casing 1. In the present instance the outlet port 4 and the exhaust port 5 are arranged in the lower portion of the circumferential wall of the casing, and the casing

55 is provided with a thickened portion or rib

11 extending partially about the same and having the conduit 9 formed therein. A valve member 12 is slidably mounted within the valve chamber 2. As here shown this valve member comprises a block shaped to

60 fit snugly within the valve chamber 2 and of a length somewhat less than the length of that chamber. A conduit is formed in the valve member and communicates with the valve chamber at both ends of the valve

65 member. In the present form of device this conduit comprises a groove 13 formed in the upper portion of the valve member, extending for the entire length thereof and having that end adjacent to the inlet port 3 of such

70 a depth that the lower edge thereof will be below the upper edge of the inlet port. That end of the valve member adjacent the inlet port is also provided with one or more transverse passages 14, extending from the

75 bottom of the groove 13 through the valve member. The inner wall of the valve chamber 2 is provided, adjacent to the end wall having the inlet port, with an annular

80 groove 15 with which the transverse passages 14 communicate when the valve member is in a position to interrupt the communication between the inlet port and the outlet port. This groove permits the steam

85 to escape from the passages 14 into the conduit 13. The valve member 12 is also provided with a second longitudinal conduit or passage 16, arranged in the lower portion thereof and adapted to connect the outlet

90 port 4 with the exhaust port 5, thereby connecting the pipe 10 which leads to the cylinder with the exhaust port. An actuating rod 17 is rigidly connected to one end of the valve member, extends through a stuffing-

95 box 18 in the cylinder head or cap 19, which is screw-threaded into that end of the casing opposite the inlet port, and is connected beyond said stuffing box with suitable operating mechanism. This mechanism, in the

100 present instance, comprises a pivoted lever 20, connected by a link 21 with a hand-lever 22.

The two ends of the valve member are substantially equal in area, and as the steam is admitted freely to both ends thereof, the

105 pressure thereof will be substantially equal on each end of the valve member and will tend to retain the valve member in adjusted positions. When the valve member has been moved into engagement with one of the end

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walls of the valve chamber, pressure will, of course, be reduced on that end of the valve member and the pressure on the opposite end thereof will be sufficient to retain the valve firmly in position until positive force has been applied thereto through the operating devices. When the valve member is in the position shown in Fig. 2, the outlet port and pipe 10 are connected with the exhaust port and the cylinder is cut off from the steam supply. When the valve member has been moved to the opposite end of the valve chamber, the passage 16 will have been moved beyond the outlet port 4 and the transverse passages 14 will have been moved into alinement with that port, thereby placing the outlet port into communication with the inlet port 3 and permitting the steam to pass therefrom to the pipe 10 and the cylinder.

It will be apparent that this construction is a very simple one involving but a single moving part and having this part of such a character that it is little liable to injury or disarrangement; and further, that the construction is such that the valve is practically balanced and will be retained in adjusted positions by the pressure of the steam in the valve chamber.

We wish it to be understood that we do not desire to be limited to the details shown and described, as obvious modifications will occur to one skilled in the art.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. The combination, with a casing having a valve chamber, said valve chamber having an inlet port at one end, having the other end closed and also having a single outlet port and an exhaust port, of a valve member mounted in said valve chamber, said valve member being of less length than said chamber, and being adapted to move longitudinally thereto to connect said outlet port with said inlet port or said exhaust port, and a conduit connecting that end of said valve chamber adjacent said inlet with the opposite end of said chamber.

2. The combination, with a casing having a valve chamber, said valve chamber having an inlet port at one end thereof and also having an outlet port and an exhaust port, of a piston-valve member mounted in said valve chamber, said valve member being of less length than said valve chamber, having its opposite ends substantially equal in area and having a conduit communicating with said valve chamber at both ends of said valve member, and means for moving said valve member longitudinally to said valve chamber.

3. The combination, with a casing having a valve chamber, said valve chamber having inlet, outlet and exhaust ports, of a valve

member slidably mounted in said valve chamber and having a conduit communicating with said chamber at both ends of said valve member and with said inlet port, and means for moving said valve member from one position to another, said valve member having passages arranged to connect said outlet port alternately with said inlet port and said exhaust port.

4. The combination, with a casing having a valve chamber, said valve chamber having inlet, outlet and exhaust ports, of a valve member slidably mounted in said valve chamber and having a conduit communicating with said chamber at both ends of said valve member and with said inlet port, and means for moving said valve member from one position to another, said valve member having a transverse passage to connect said inlet port with said outlet port when said valve member is in one position and having a longitudinal passage to connect said exhaust port with said outlet port when said valve member is in another position.

5. The combination, with a casing having a valve chamber, said valve chamber having an inlet port in one end thereof and having an outlet port and an exhaust port in one side thereof, of a valve member slidably mounted in said valve chamber and having a longitudinal conduit communicating with said chamber at both ends of said valve member and with said inlet port, said valve member also having a second longitudinal conduit arranged to connect said outlet port with said exhaust port when said valve member is in one position, and a transverse conduit arranged to connect said outlet port with said inlet port when said valve member is in another position, and means for moving said valve member from one position to another.

6. The combination, with a casing having a valve chamber, said valve chamber having an inlet port in one end thereof, an outlet port in one side thereof, a conduit formed in said casing and extending about said valve chamber and communicating with said outlet port, and a pipe also communicating with said conduit, said valve chamber also having an exhaust port arranged in one side thereof in longitudinal alinement with said outlet port, of a valve member slidably mounted in said valve chamber and having a longitudinal groove extending throughout the length thereof and so arranged as to communicate with said inlet port, a transverse passage in that end of said valve member adjacent to said inlet port, an annular groove formed in the inner wall of said casing and arranged to communicate with said transverse passage when said valve member is in one position, a longitudinal passage formed in one side of said valve member and arranged to connect said out-

let port with said exhaust port when said transverse passage is in communication with said annular groove, and means for shifting said valve member to move said longitudinal passage beyond said outlet port and to move said transverse passage into alignment with said outlet port.

7. The combination, with a casing having a valve chamber provided with an inlet port, an outlet port, and an exhaust port, of a piston valve member mounted in said chamber and capable of movement longitudinally

thereof to control said ports, and a conduit formed in said valve member and communicating with said inlet port and with said valve chamber at both ends of said valve member.

In testimony whereof, we affix our signatures in presence of two witnesses.

CHARLES B. KING.

CLARENCE B. WESTON.

Witnesses:

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GEO. A. CHENEY.