

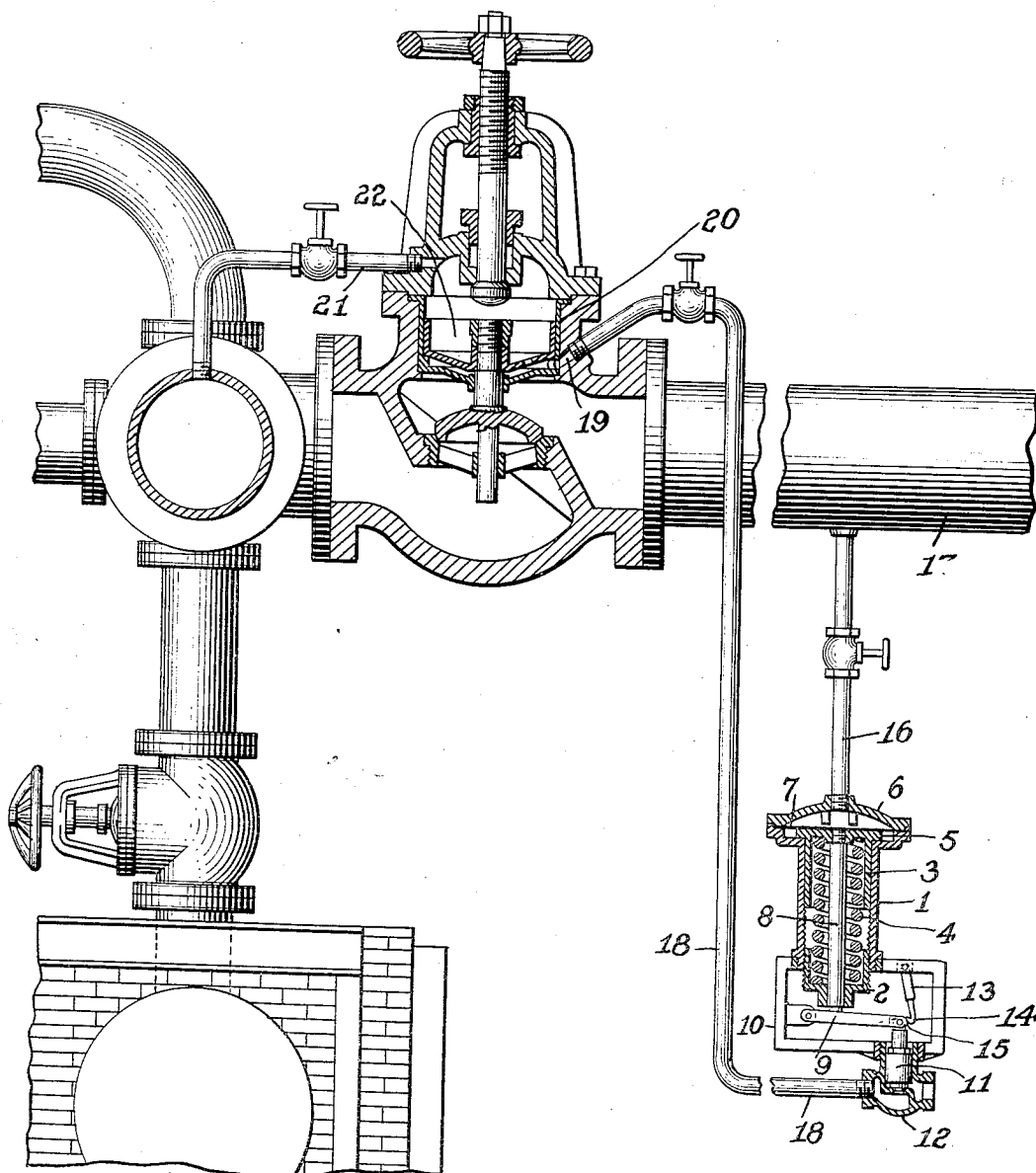
G. B. KENNINGTON.
VALVE.
APPLICATION FILED SEPT. 7, 1909.

948,452.

Patented Feb. 8, 1910.

2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

J. Herbert Bradley.
Francis J. Tomason

George B. Kennington INVENTOR
by Christy and Christy
Attys

G. B. KENNINGTON.

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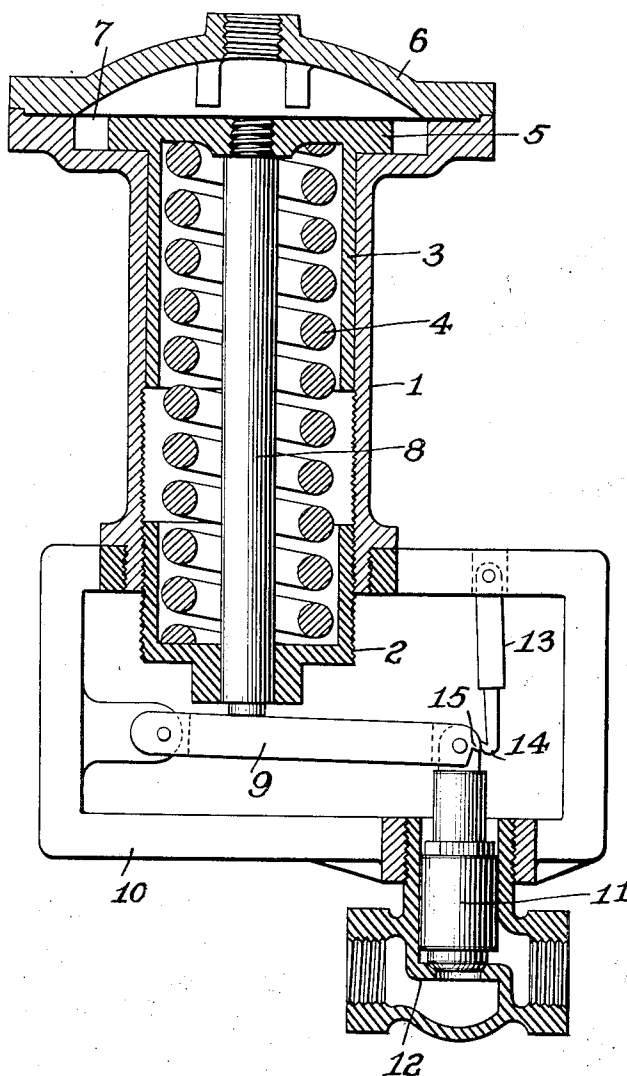
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2 SHEETS—SHEET 2.

FIG. 2.



WITNESSES:

J. Herbert Bradley.
Francis J. Tomason

George B. Kennington INVENTOR
by Christy and Christy
ATTY'S

UNITED STATES PATENT OFFICE.

GEORGE B. KENNINGTON, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO GOLDEN-ANDERSON VALVE SPECIALTY COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

VALVE.

948,452.

Specification of Letters Patent.

Patented Feb. 8, 1910.

Application filed September 7, 1909. Serial No. 516,482.

To all whom it may concern:

Be it known that I, GEORGE B. KENNINGTON, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Valves, of which improvement the following is a specification.

The invention described herein relates to certain improvements in pilot valves used in connection with non-return valves, preferably of the type or construction shown and described in application Serial No. 492,051, filed April 24, 1909, by Charles E. Golden.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification Figure 1 is a sectional elevation showing my improved pilot valve and its connection with the non-return valve and the steam supply pipe, Fig. 2 is a sectional elevation on enlarged scale of the pilot valve.

In the practice of my invention the pilot valve consists of a shell or casing 1, closed at its lower end by a hollow threaded plug 2 screwing into the shell and having a plunger 3 also preferably hollow, movably mounted in its upper end. Between the plug and plunger is arranged a spring 4 whose tension can be adjusted by the plug 2. The plunger is provided with a flange 5 normally resting on the upper plate of the casing 1, which is constructed so as to form in connection with the cap 6 a chamber at the upper end of the casing. This chamber is divided into two compartments by a diaphragm 7 having its edges secured between the cap and upper end of the casing. This diaphragm rests upon the upper end of the plunger 3. A stem 8 is connected to the plunger and extends down through the plug 2 bearing at its lower end on a lever 9 pivotally mounted in the yoke 10 preferably carried by the casing. This lever is also connected at its free end with a valve 11 arranged in the shell 12 in such manner as to seat against the flow of fluid through the valve. Any suitable construction may be employed for holding the valve in open position and against movement by the spring 4. A suitable construction to that end consists of the swinging arm 13 so pivotally mounted in the yoke that the lower end

which is provided with a hoop 14 will have a bias to swing into engagement with a shoulder 15 on the valve stem or lever, when the latter is raised, thereby holding the valve 11 in open position. In arranging this pilot valve to control the operation of the non-return valve, the upper compartment of the chamber in the casing 1 is connected by a pipe 16 to the steam line 17 extending from the boiler at a point outside of the location of the non-return valve which is also located in the steam line. The inlet port of the valve casing 12 is connected by a pipe 18 to a port 19 in the lower end of the cylinder 20 on the non-return valve. The upper end of this cylinder is connected by a pipe 21 with the inlet port of the non-return valve or to the steam supply pipe at a point inside of the non-return valve, or between it and the boiler. When the parts are thus connected boiler pressure will be exerted on the upper side of the piston 22 to close the non-return valve and to a port through or around said piston so that the same pressure will be normally maintained on both sides of the piston and in the connecting pipe 18. Boiler pressure or the normal pressure in the steam line will be maintained on the top of the diaphragm 7 thus forcing down the plunger 3 and with it the stem 8 against the tension of the spring 4. When thus forced down by steam pressure in the upper compartment of the pilot valve, the stem acting through the lever 9 will hold the valve 11 in closed position. In case of a break in the steam line, the pressure on the diaphragm 7 will be relieved permitting the spring 4 to expand thereby lifting the stem 8. As soon as relieved of the pressure of the stem 8, the valve 11 will be shifted to open position by steam pressure on its under side thereby permitting an exhaust of steam from the under side of the piston in the non-return valve, which is held in open position when pressures are equal on both sides of the piston, by the pressure of steam on the under side of the valve. As soon as pressure is reduced on the underside of the piston the pressure on the upper side of the piston which is of greater area than the valve, will force the latter to closed position, thereby stopping the flow of steam into the supply line.

The tension of the spring 4 is adjusted

so as to permit a variation in the steam supply line due to the normal use of steam in the plant without permitting of the opening of valve 11. By the employment of a lever 5 it is possible to adjust the leverage so that boiler pressure which is constantly exerted on the under side of the valve 11 will shift the valve for a slight reduction of pressure on the diaphragm 7. It will be observed 10 that the catch or hook 13 will automatically engage the lever or the stem of valve 11, and hold the same in open position. While this valve is open sufficient pressure cannot accumulate under the piston of the non-return valve to permit of the opening of said 15 valve by the pressure on the under side thereof.

I claim herein as my invention:

1. In a valve mechanism, the combination 20 of a casing having a passage therethrough, a valve controlling said passage, a cylinder, a piston arranged in said cylinder, a port or passage for conducting fluid under pressure to that side of the piston where it 25 will operate to close the valve, means for permitting the flow of fluid to the opposite side of the piston, a valve mechanism controlling the escape of fluid pressure from the cylinder on the side of the piston opposite 30 that on which fluid pressure is introduced into the cylinder, and a lock for holding such valve mechanism in open position.

2. In a valve mechanism the combination of a valve adapted to be opened by fluid

pressure, means operative by fluid pressure 35 for holding the valve normally in closed position, and a lock for holding the valve in open position.

3. In a valve mechanism the combination of a valve adapted to be opened by fluid 40 pressure, a shell or casing, a plunger arranged in said shell and operative by fluid pressure to close said valve and hold it normally in closed position and a lock for holding the valve in open position. 45

4. In a valve mechanism, the combination of a valve, a lever connected to the stem of the valve, a shell or casing, a plunger arranged in said casing and operative in one direction by fluid pressure, a spring for 50 shifting the plunger in the opposite direction and a stem connected to the plunger and engaging the lever.

5. In a valve mechanism, the combination of a valve, a lever connected to the stem of 55 the valve, a shell or casing, a plunger arranged in said casing and operative in one direction by fluid pressure, a spring for shifting the plunger in the opposite direction and a stem connected to the plunger and 60 engaging the lever, and a lock for holding the valve in open position.

In testimony whereof, I have hereunto set my hand.

GEORGE B. KENNINGTON.

Witnesses:

CHARLES BARNETT,
FRANCIS J. TOMASSON.