

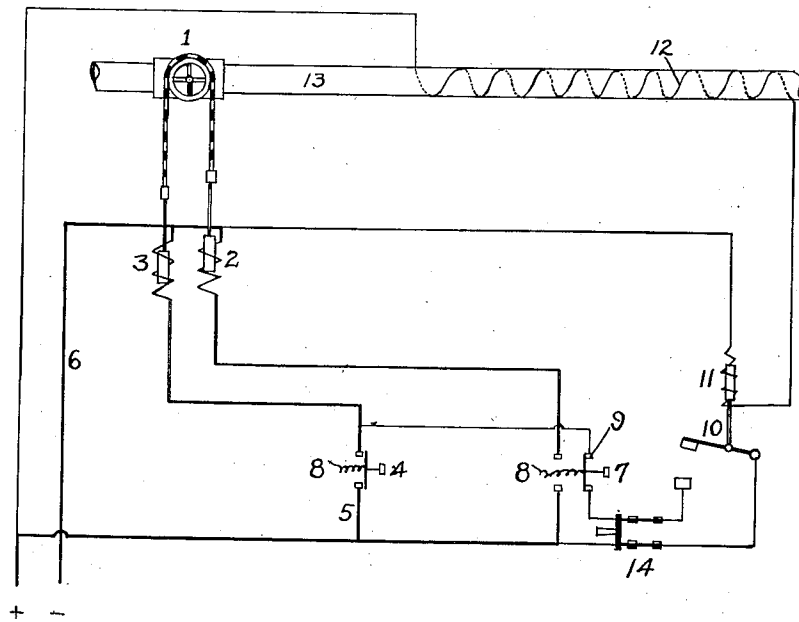
C. W. LARNER & H. B. TAYLOR.

VALVE CONTROL.

APPLICATION FILED DEC. 10, 1917.

1,284,197.

Patented Nov. 5, 1918.



Inventors

C. W. LARNER

H. B. TAYLOR

By

Karl Fanning

THEIR Attorney

UNITED STATES PATENT OFFICE.

CHESTER W. LARNER, OF CLEVELAND, OHIO, AND HARVEY BIRCHARD TAYLOR, OF PHILADELPHIA, PENNSYLVANIA.

VALVE CONTROL.

1,284,197.

Specification of Letters Patent.

Patented Nov. 5, 1918.

Application filed December 10, 1917. Serial No. 206,440.

To all whom it may concern:

Be it known that we, CHESTER W. LARNER and HARVEY BIRCHARD TAYLOR, citizens of the United States, residing at Cleveland, Ohio, and Philadelphia, Pennsylvania, respectively, have invented certain new and useful Improvements in Valve Controls, of which the following is a specification.

Our invention consists of a valve which may be operated by power means for opening or closing it, and with which there is associated a safety device arranged so that when the apparatus controlled by the valve is out of order, or in case of other emergency, the operating mechanism will operate the valve.

In the accompanying drawing, which shows our invention in diagram, we have shown our invention applied to a typical valve 1 in a pipe 13 arranged to be operated by a solenoid 2 to open the valve and by another solenoid 3 to close the valve. A circuit for the solenoid 3 which closes the valve is controlled by a push button 4 which is arranged in the wire 5 leading from one side of the source of supply of electricity to the solenoid. The other side of the solenoid is connected through the wire 6 directly to the other side of the source of supply. The solenoid 2 which opens the valve is energized by a circuit in which there is a push button 7 between the solenoid and one side of the source of supply, the other side of the solenoid being connected by wire 6 directly to the other side of the source of supply. Both of these push buttons 4 and 7 are normally held open by springs 8 and are held closed only when the operator holds them in. The push button 7 associated with the opening solenoid 2 is also provided with an auxiliary set of contacts 9 which are normally closed and are in another circuit leading to one side of the solenoid for closing the valve. Beyond these normally closed contacts 9 of the push button 7 and between them and one side of the source of supply is a switch 10 which is closed by gravity. This switch is provided with a solenoid 11 which may hold it open. At one side, the solenoid 11 is connected directly to the source of supply through wire 6 and at the other side, it is connected to the

other side of the source of supply through a coil 12 which surrounds the pipe in which is the valve 1 which is controlled. When the apparatus is in normal operating condition, current continuously passes through the solenoid 11 and holds open the gravity closed switch 10 but if the pipe 13 breaks, the circuit for the solenoid 11 will be broken at the coil 12 surrounding the pipe 13 and will allow the gravity switch 10 to close thereby closing a circuit through the solenoid 3 which closes the valve 1. It will thus be seen that if there is a break in the pipe, the valve will be automatically closed until the break is repaired. A double pole hand switch 14 is shown in the circuit controlled by the gravity switch 10 and by opening this double pole switch 14 the safety protection may be removed and the valve 1 may operate to open and stay open irrespective of the condition of the pipe 13.

The arrangement described above represents one embodiment of this invention, but other arrangements, and other means of operating the valve are of course possible, and are specifically included within the scope of this invention which may be applied to any type of valve. The primary operation of the valve may be by means of a hydraulic cylinder or motor, by devices using steam or compressed air, by electric motor, or by any other available source of power.

It is also, of course, conceivable that conditions may arise where reasons of safety would require the opening of a normally closed valve instead of the closing of the valve as above described, and this arrangement is, therefore, also within the scope of the invention.

It will be observed that by the use of our double position push button, the valve may at any time be opened by closing the push button since the closing movement of the push button will not only close the circuit to energize the opening solenoid but will also open the emergency energizing circuit of the closing solenoid so that if the gravity switch should drop for any reason other than the bursting of the pipe line and the valve should thus be closed accidentally and it should, therefore, be necessary to open

the valve immediately by manual control, the act of pressing the button to open the valve manually will at the same time break the circuit which has already closed the valve accidentally.

We claim as our invention:

1. A valve, means for operating the valve by power, and an electric control for said operating means arranged to be actuated automatically by the interruption of an electrical circuit caused by the breaking of a conductor forming a part of said circuit.

2. A valve, means for operating the valve by power, and an electric control for said operating means arranged to be actuated automatically by the interruption of an electrical circuit caused by the breaking of a conductor forming a part of said circuit, together with a means of actuating the control by hand for opening and closing the valve.

3. A valve, an operating motor for the valve and electrical control of said operating motor arranged to maintain the valve in its normal position by means of a closed electrical circuit, the interruption of said circuit by the breaking of a wire or other conductor serving to set the valve operating motor in action.

4. A valve, a power operating mechanism therefor, and an electrical device actuated by the interruption of an electrical circuit due to the breaking of a wire or other conductor and controlling the operating mechanism.

5. A valve, a power operating mechanism therefor, an electrical device actuated by the interruption of an electrical circuit due to the breaking of a wire or other conductor and controlling the operating mechanism, and an independent hand operated control.

6. A pipe, a valve in the pipe, a solenoid for closing the valve, a normally open push button for energizing the solenoid, a coil on the pipe, an electromagnet in series with the coil, a switch held open by the electromagnet when energized, a circuit passing through the switch and the closing solenoid, a solenoid for opening the valve, a normally open push button for energizing the last mentioned solenoid, and normally closed

contacts on the last mentioned push button and in the circuit.

7. A valve, manually controlled electric means to operate the valve, and emergency means to operate the valve automatically when a circuit is broken.

8. A valve, a solenoid to close the valve, a push button to energize the solenoid, automatic means to energize the solenoid, a solenoid to open the valve, and means to energize the opening solenoid and simultaneously disconnect the automatic means.

9. A valve, a solenoid to close the valve, a push button to energize the solenoid, and automatic means to energize the solenoid when a circuit is broken.

10. A valve, manually controlled electric means to operate the valve, emergency means to operate the valve automatically, and means for causing one part of the manually controlled means when operated to disconnect the automatic means.

11. A pipe, a valve in the pipe, a solenoid for closing the valve, a coil on the pipe, an electromagnet in series with the coil, a switch held open by the electromagnet when energized, a circuit passing through the switch and the closing solenoid, a solenoid for opening the valve, and a normally open push button for energizing the last mentioned solenoid.

12. A pipe, a valve in the pipe, a solenoid for closing the valve, a normally open push button for energizing the solenoid, a coil on the pipe, an electromagnet in series with the coil, a switch held open by the electromagnet when energized, and a circuit passing through the switch and the closing solenoid.

13. A valve, manually controlled electric means to close the valve, and emergency means to close the valve automatically, manually controlled electrical means to open the valve, and means to disconnect the emergency means.

14. A valve, a solenoid to close the valve, a push button to energize the solenoid, automatic means to energize the solenoid, and means to disconnect the automatic means.

CHESTER W. LARNER.
H. BIRCHARD TAYLOR.