No. 831,226. PATENTED SEPT. 18, 1906.

F. B. HINKSON.

ELECTRIC CUT-OUT.

APPLICATION FILED MAR. 25, 1905.

Fig. 1.

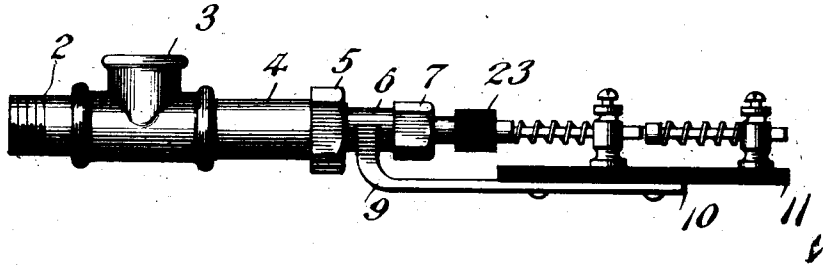


Fig. 2.

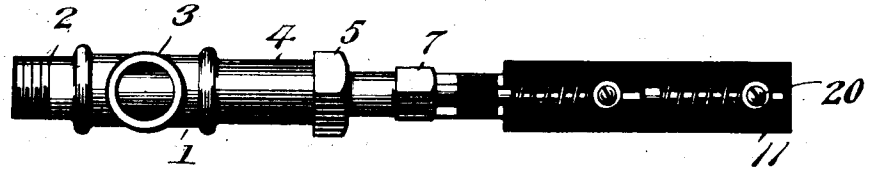


Fig. 3.

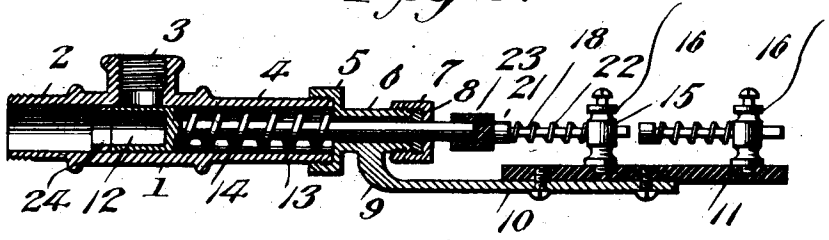
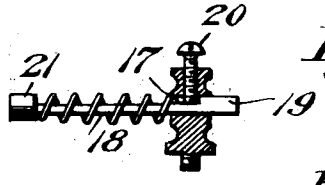


Fig. 4.



Witnesses

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ELECTRIC CUT-OUT.

No. 831,226. Specification of Letters Patent. Patented Sept. 18, 1906.

Application filed March 25, 1905. Serial No. 252,083.

To all whom it may concern:

Be it known that I, FRANK B. HINKSON, a citizen of the United States, residing at New Castle, in the county of Lawrence and State of Pennsylvania, have invented new and useful Improvements in Electric Cut-Outs, of which the following is a specification.

The invention relates to an improvement in electric cut-outs and circuit-makers designed and particularly constructed to be controlled by water-pressure.

The invention is particularly designed for use in connection with water systems, such as the ordinary house system arranged to contain an electric purifier or filter, in which it is desirable to energize the filter only during the passage of water therethrough.

The main object of the invention is to energize the purifier-circuit during the passage of water in any quantity whatever through the filter and to automatically deënergize said circuit when the flow of water through the filter has been cut off.

To this end the invention, broadly stated, consists in a valve controlling the admission of water to the filter-supply pipe and adapted upon operation to close the filter-circuit and to automatically break said circuit by the closing operation of the valve.

The preferred embodiment of details of the invention will be described in the following specification, with reference to the accompanying drawings, in which—

Figure 1 is a view in elevation illustrating my invention. Fig. 2 is a plan of the same. Fig. 3 is a longitudinal vertical section through the device, the sliding contacts and binding-posts being shown in elevation. Fig. 4 is an enlarged vertical section through one of the binding-posts, illustrating the sliding connection therewith of the movable contact.

Referring particularly to the drawings, wherein like reference-numerals indicate like parts throughout the several views, 1 represents a T-coupling, the branch 2 of which is designed to be connected to the house or other main, while the branch 3 is connected to the filter service-pipe, it being understood that the latter pipe is the house service-pipe and that the filter or purifier is connected in this pipe to purify all water to be utilized in the house. The branch 4 of the coupling in alinement with branch 2 is somewhat longer than the latter branch and is adapted to serve as a housing for the valve-spring, as hereinafter described. The free end of this branch is closed by a cap 5, having a reduced tubular projection 6, the free end of which is closed by a cap 7, between which and the end of projection 6 a suitable packing-ring 8 is introduced. An arm 9 is formed integral with the projection 6, extending downward therefrom a short distance and then at right angles parallel with the branches 2 and 4 of the coupling to provide a support 10, on which is fixed a suitable insulating-base 11.

A barrel-valve 12 is mounted for reciprocation within the coupling, opening toward the branch 2 and normally closing the passage between the branches 2 and 3. From the closed end of the valve proper projects a stem 13, which extends through and beyond the cap 7, as shown. Between the closed end of the valve and the shoulder formed by the junction of the projection 6 and the head of cap 5 is arranged a spring 14, encircling the valve-stem and operative to maintain the valve 12 normally in closed position.

15 represents the binding-posts, to which are connected the terminals 16 of the purifier-circuit. These posts are fixedly supported by the insulated base 11 and are arranged in alinement with the valve-stem 13. Each post is formed with a transverse opening 17, in which is slidably mounted what I term a "movable contact" 18. The ends of the contacts remote from the coupling are formed with enlargements 19, and the openings 17 within the binding-posts are of a size to permit passage of these enlarged ends of the contact. A screw 20, vertically threaded in the binding-post, projects within the opening 17 to prevent withdrawal of the contact, as will be evident. The opposite ends of the contacts are provided with circular heads 21 and encircling the shank of each contact and bearing between the head 21 and the respective binding-post with a spring 22, operative to maintain the contact at the extreme of its movement toward the coupling. The contact 18 contiguous the valve-stem 13 is connected directly to said stem through the medium of an insulated connection 23, whereby said contact is positively operated by the valve-stem.

The operation of the improved cut-out is as follows: As long as the pressure in the main and house service-pipes is static the spring 14 will operate to maintain the valve 12 in closed position, and thereby hold the movable contacts separated and the purifier-

circuit broken. When, however, the force beyond the valve is changed to a dynamic force by the opening of any faucet or vent in the house-service, the valve is moved to establish communication between the main and service-pipes. This movement of the valve through its stem 13 and against the tension of spring 14 forces the contact 21 connected with the valve-stem against the remaining contact 21, and thereby closes the circuit and energizes the purifier. It is to be noted that in normal position of the parts the projection of the closing wall of valve 12 beyond the branch 3 of the coupling is slightly greater than the distance between the adjacent ends of the contacts 21, with the effect to energize the purifier-circuit and start the effective operation of the purifier before any flow of water occurs. This insures the purification of all water passing through the service-pipe. When the flow of water has been cut off at the faucet or vent, the force within the coupling becomes again static, so that the pressure upon the valve is equal from the service-pipe and main, and the spring 14 operates to close the valve and disengage the contacts breaking the purifier-circuit.

The sliding contacts are a material feature of the present invention, as they provide for maintaining the closed circuit under varying volumes of water flowing from the vent, it being noted that the contacts engage to close the circuit just previous to the opening of the valve and will maintain this engagement during the complete opening movement of the valve or in any position of the valve in establishing communication between the main and house service-pipes. By this construction the operation of the device is effective whether the valve is but slightly opened by a slight vent in the house-service or is fully opened by one or more complete vents. It is further desirable to limit the closing movement of the valve 12 in order to insure its effective operation, and I contemplate the use of any convenient construction to this end. However, for the purposes of the present invention I prefer to limit the closing movement of the valve by ring-stop 24, secured within the branch 2 of the coupling in advance of its communication with the branch 3. This stop limits the closing movement of the valve and maintains the latter in effective relation to the opening of branch 3, as will be evident.

Having thus described the invention, what is claimed as new is—

1. A water-service pipe, a valve mounted therein, said valve being closed when the pressure in the pipe is static and opened when the pressure becomes dynamic, an insulated base carried by the pipe, a pair of binding-posts secured to the base, and normally separated contacts mounted upon the binding-posts for movement in the same direction, one of said contacts being connected to and insulated from the valve to be moved into engagement with the other contact prior to the opening of the valve, the opening of the valve being permitted by the movement of said other contact.

2. A water-service pipe, a valve mounted therein, said valve being closed when the pressure in the pipe is static and opened when the pressure becomes dynamic, an arm carried by the pipe, an insulated base carried by the arm, a pair of binding-posts mounted on the base, and normally separated contacts mounted on the binding-posts for movement in the same direction, one of said contacts being connected to and insulated from the valve to be moved into engagement with the other contact prior to the opening of the valve, the opening of the valve being permitted by the movement of said other contact.

3. A water-service pipe, a valve mounted therein, said valve being closed when the pressure in the pipe is static and opened when the pressure becomes dynamic, a pair of binding-posts, contacts movably mounted upon the posts and normally separated, and means for retaining the contacts in their normal positions, one of said contacts being connected to and insulated from the valve to be moved into engagement with the other contact prior to the opening of the valve, the opening of the valve being permitted by the movement of said other contact.

4. An electric cut-out comprising a two-way coupling, a cap closing one end of the coupling and provided with a reduced tubular projection, a valve mounted within the coupling and provided with a stem extending beyond said tubular projection, said valve being closed when the pressure is static and opened when the pressure becomes dynamic, a cap mounted upon said tubular projection, an arm carried by the tubular projection, an insulated base carried by the arm, binding-posts mounted upon the insulated base, contacts movably mounted upon the binding-posts and normally separated, one of said contacts being connected to and insulated from the stem of the valve, and means for retaining the contacts in their normal positions.

5. A pipe, a valve movable therein, and a pair of contacts movable in the same direction and normally separated, one of said contacts being connected to and insulated from the valve, said contact closing the circuit by engagement with the other contact prior to the full movement of the valve, the full movement of the valve being permitted by the movement of said other contact.

6. A pipe, a valve movable therein, an electrical contact connected to and movable with the valve, and a second contact independently and slidably mounted with relation to the first contact, said contacts being

normally spaced and moved into engagement upon the initial opening movement of the valve, both of said contacts being moved and in electrical engagement during the movement of the valve.

7. A pipe, a valve movable therein, an electrical contact connected to and movable with the valve, and a second contact arranged in alinement with the first contact, both of said contacts being slidably mounted and adapted to be moved simultaneously in electrical engagement during the opening movement of the valve.

8. A pipe, a valve movable therein, an electrical contact connected to and movable with the valve, and a second contact arranged in alinement with the first contact, both of said contacts being slidably mounted and adapted to be moved simultaneously in electrical engagement during the opening movement of the valve, and independent means for returning each of said contacts to normal position.

9. A pipe, a valve therein, an electrical contact connected to and movable with the valve, a second contact independently and slidably mounted, both of said contacts being movable in the movement of the valve, one of the contacts having a movement greater than that of the other, whereby the valve is capable of a slight movement without closing electrical connection, and said contacts may be maintained separated when the valve is closed.

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

FRANK B. HINKSON.

Witnesses:

WM. I. EVANS,

THOS. E. HEWITT.