Nov. 8, 1927. 1,648,197

B. T. ROODHOUSE

WATER OPERATED CIRCUIT CLOSER

Filed March 22, 1926

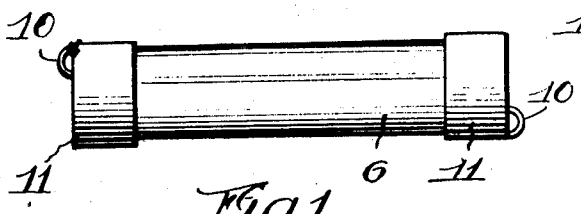


Fig. 1

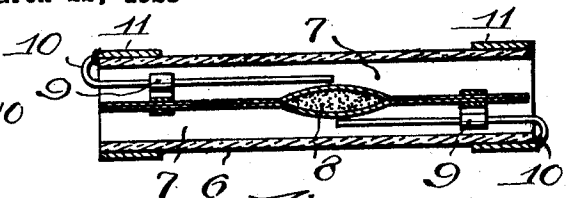


Fig. 2

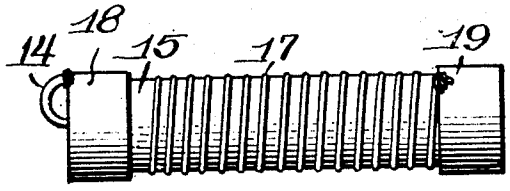


Fig. 3

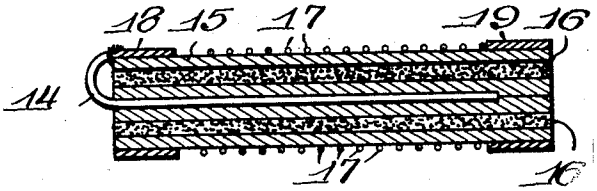
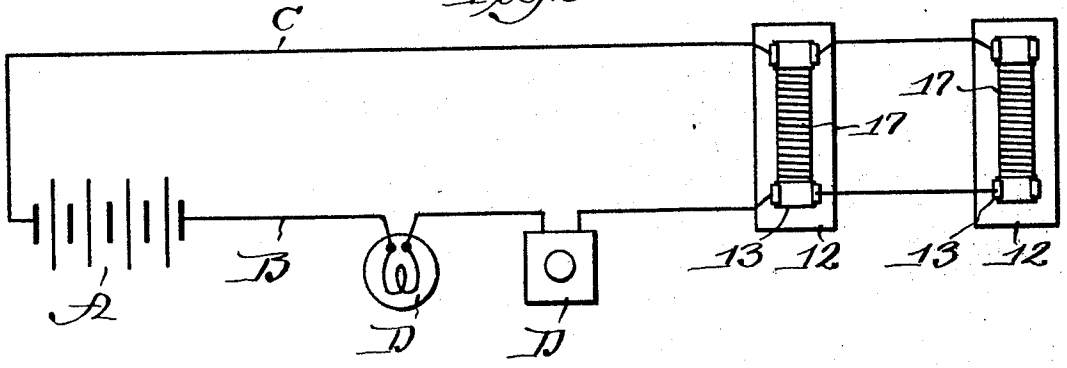


Fig. 4

Fig. 5



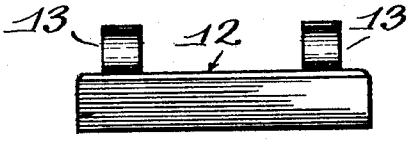


Fig. 6

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Patented Nov. 8, 1927. 1,648,197

UNITED STATES PATENT OFFICE.

BENJAMIN T. ROODHOUSE, OF WILMETTE, ILLINOIS.

WATER-OPERATED CIRCUIT CLOSER.

Application filed March 22, 1926. Serial No. 96,404.

My present invention relates to the provision of a water operated circuit closing device and has special reference to the provision of such a device which may be placed so as to detect leaks.

In all systems employing a water circulation, leaks which sometimes are extensive and create great damage invariably commence very gradually, sometimes taking days, weeks or even months in enlarging to such an extent as to create appreciable loss or damage.

My device is intended to be placed at joints or other places where leaks may commence with a suitable electric circuit, or circuits, in which an alarm is included, so that the presence of the leak will be indicated at its inception.

I accomplish the foregoing object by means of the instrumentalities illustrated in the accompanying drawing in which—

Fig. 1 is an elevation of one form of water operated circuit closer;

Fig. 2 is a central vertical, longitudinal section through Fig. 1;

Fig. 3 is an elevation of a modified form of a water operated circuit closer;

Fig. 4 is a central vertical, longitudinal section of the structure shown in Fig. 3;

Fig. 5 is a schematic diagram of a circuit in which either of the above illustrated circuit closers may be included; and

Fig. 6 is an elevation of a mounting clip.

The circuit closer illustrated in Figs. 1 and 2 is suitable for installation in a drip pan or other receptacle and consists of a short length, say two inches or thereabouts, of glass or other suitable tubing, 6. Located within the tubing are one or more layers of an absorbent material, 7, such as blotting paper, absorbent cotton, or wool asbestos.

Around the central portion of the absorbent material, or between the layers thereof, if more than one layer is employed, is provided a dry salt, 8, such as sodium chloride or ammonium chloride, or in fact, any salt which, with water, will form an electrolyte.

To each end of the absorbent material is clipped by a suitable piece of copper or brass, 9, a length of conductor, 10, which is brought around to the outside of the tubing and there secured by solder, or in any other suitable way, to a metallic conductor band 11.

This metallic conductor band, of course, can be entirely dispensed with but it is convenient so as to permit of the circuit closer being readily slid into and detached from a mounting consisting of an insulating base, 12, supporting spaced clips, 13, for receiving the device, and attaching the conductors of the circuit.

The circuit closer illustrated in Figs. 3 and 4 consists of a central, comparatively heavy conductor wire, 14, about which is rolled or wrapped a sheet of absorbent material, 15, between the layers of which is placed the salt, 16, as heretofore described in connection with the structure shown in Figs. 1 and 2.

About the outside of the rolled or wrapped absorbent material, 15, is coiled a conductor wire, 17.

The interior conductor wire, 14, and the exterior conductor wire, 17, may be respectively secured to conducting caps, 18 and 19, provided upon the respective ends of the device.

Any suitable circuit may be employed in connection with the structures heretofore described such as a battery A, or any other source of electrical supply, with leads B and C taken from the respective poles of the source of supply. In either lead A or B is included a visual or audible alarm device D.

Across the leads B and C are situated the devices heretofore described, a conductor of each said device being secured to opposite leads from the source of supply.

The absorbent material, and the dry salts, heretofore mentioned, are not conductors of electricity, but as soon as water is brought into contact with the absorbent material it is carried thereby to the salt which the absorbent material retains. The salt is thereby dissolved forming an electrolyte and thereby providing a conductor for the electricity between the terminals of the circuit closer.

I have found that in using common salt (sodium chloride) the dry salt is of such high resistance that no appreciable current will flow through it until water is added, but, nevertheless, it appears to me to be desirable to arrange the elements so that the absorbent material holds the salt away from the electrodes until the water operates upon the device.

A fairly pure grade of common salt is neither hydroscopic nor deliquescent and therefore no inadvertent operation of the de-

vice need be anticipated on account of damp weather or temperature changes.

In using this invention with sprinkler systems it is well known that the water carried by such systems is usually highly impure from sedimentation and other causes so that the devices may be operative in such connection without the presence of the salt, but I, nevertheless, prefer the presence of the salt as adding considerable dependability in operation.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

A water operated circuit closing device comprising spaced conductors connected by non-conducting, absorbent material and a dry salt, which, with water, will form an electrolyte, held in position and separated from said conductors by said absorbent material.

BENJAMIN T. ROODHOUSE.