

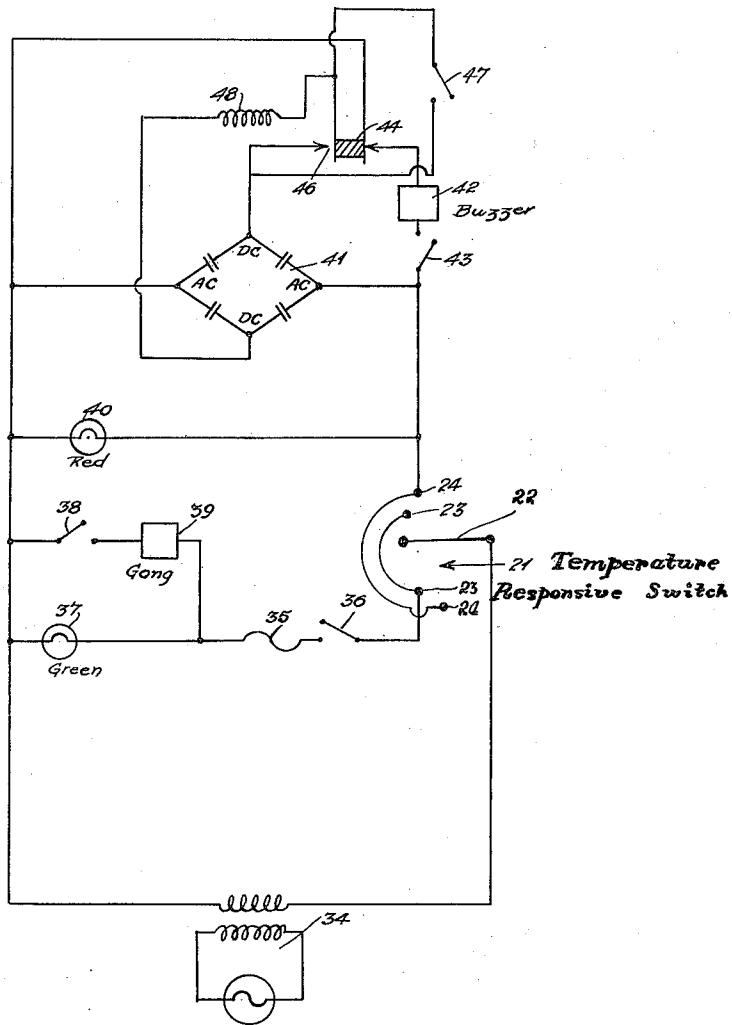
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WARNING SIGNAL FOR HYDROTHERAPEUTIC SYSTEMS

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WARNING SIGNAL FOR HYDROTHERAPEUTIC SYSTEMS

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1 Claim. (Cl. 177—311)

This application is a continuation in part of application Serial No. 492,422, filed October 31, 1930, for Systems for hydrotherapeutic treatment.

5 My present invention relates to systems for hydrotherapeutic treatment, and has particular reference to the construction and operation of warning systems for indicating excessive variations in the temperature of the fluid used for
10 the treatment.

Although the temperature regulating mechanism provided for treatment systems will normally vary the relative proportions of the hot and cold fluid supplies so as to maintain a desired temperature range despite wide variation
15 in their temperature and pressure, an abnormal change in either temperature or pressure may require a change in the setting of the regulating valves for controlling relative flow of the hot and cold fluids, or other action on the part of
20 the attendant. It therefore becomes necessary to notify the attendant whenever the temperature of the treatment fluid varies beyond the desired range, and this notification should be made
25 in a manner that will not alarm or unduly excite the curiosity of the patient undergoing treatment.

It is the principal object of my invention to eliminate all gongs or harsh-sounding alarms, and to utilize a single gong stroke or a soft chime
30 in addition to a warning light signal for initial variation from the normal temperature range, to be followed by a buzzer and a danger light signal upon further change.

35 It has also been found desirable to combine a remote control with the warning system, and to arrange the remote control so that the warning buzzer may be silenced; the danger light, however, is preferably not included in the remote
40 control, and thus provides a visual signal that is independent of the audible signal.

With the above and other advantageous features in view, the invention includes a novel arrangement of apparatus, more fully disclosed in
45 the detailed description following, in conjunction with the accompanying drawing, and more specifically defined in the claim appended thereto.

The drawing is a diagrammatic view of the wiring connections for an alternating current
50 system with remote control.

The experience of nurses and doctors specializing in hydrotherapeutic systems has indicated that a remote control for a danger buzzer is desirable, as such remote control permits the
55 attendant to stop the noise of the buzzer; the

danger light, however, should be independent so that the attendant will know which one of several installations should be attended to, and so that inattention will be noticed by the supervisors or other officials.

The wiring connections shown in the drawing are preferably used, for a system of this type, the specific connections shown being arranged for
5 alternating current use.

Referring to the drawing, an illustrative arrangement includes a mechanism 21, preferably of the thermostatic type, which is responsive to changes in temperature of the treatment fluid, and which has an arm 22 movable in response
10 to the fluid temperature variations, and contact devices which may be set for any desired temperature, and which include two adjustable wiping contacts 23 and two adjustable end contacts
15 24. The warning signals include a warning green light 37, a warning gong 39, a danger red light 40 and a danger buzzer 42, with control switches and wiring connections as illustrated.

The incoming current passes through the transformer 34 to a fuse block 35 and a main switch 36, and then branches, one branch passing through a green light 37 and then to the temperature responsive switch contacts 23, a second
25 branch passing through a gong switch 38, and the gong 39, to the wiping contacts, a third branch passing through the red light 40 to the end contacts, and a fourth branch passing through the A. C. terminals of a rectifying unit
30 41, back to the end contact side of the red light and through the buzzer 42, a buzzer switch 43, and the lower contact 44 of a D. C. relay switch 45 to the A. C. terminal of the rectifier. The D. C. terminals of the rectifier are connected through the upper contact 46 of the relay switch, and through the push button 47 and the electro-
35 magnet 48.

When the fluid temperature varies, the arm 22 shifts in response thereto. If the change is excessive and beyond the desired temperature limits the arm 22 contacts one or the other wiping contacts 23, which have previously been set at
45 predetermined temperature limits; the switches being in closed position, the engagement of the arm with a wiping contact lights the green light and actuates the hammer of the gong so as to obtain a single audible stroke, the rectifier effectively preventing further actuation of the hammer. If the regulating valves for controlling flow of the hot and cold fluids are not reset by the attendant, and the temperature variation increases, the arm, or a contact spring (not shown)
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thereon, will engage one or the other end contact, these having been set for the final limiting temperatures, and the red light lights and the buzzer is actuated.

8 When the temperature varies to the predetermined limit, and the arm of the temperature responsive mechanism contacts an end contact, the red light lights and the buzzer sounds. The nurse or attendant may then press the push button, 10 thus causing the lower relay switch contact to break and the upper relay switch contact to make, the buzzer then being cut out; the red light still remains lighted until the fluid control valves are adjusted or the main switch is operated.

15 The described signal systems are therefore simple and effective in operation, and are readily adapted to suit the requirements of different hydrotherapeutic systems and operators. Preferably the signal systems are housed in a control 20 cabinet which may be kept locked to prevent unauthorized access and to eliminate tampering, the cabinet being designed to permit the seeing and the hearing of the signals.

While I have described a specific constructional 25 embodiment of my invention, it is clear that desired changes in the operating procedure, and in the relative arrangement of the parts, may be made to suit the requirements of different hydrotherapeutic systems and operators, within the 30 spirit and the scope of the invention as defined in the appended claim.

I claim:

An electric signalling system comprising a source of E. M. F., a thermally responsive switching device having a thermally responsive movable contact element and two insulated fixed 5 contacts disposed in the path of the movable element, and so spaced that the first of said fixed contacts corresponds to one predetermined temperature, and the second of said fixed contacts 10 corresponds to a second predetermined different temperature; a first circuit in series with said source of E. M. F., said movable element and the first of said fixed contacts and including a preliminary warning signal; a second circuit in 15 series with said source of E. M. F., said movable contact element and said second fixed contact and including at least one danger warning signal; a third circuit in series with said source of E. M. F., said movable contact element and said 20 second fixed contact and including means for breaking the circuit for at least one danger warning signal, said means including mechanism comprising a relay winding, normally closed contacts controlled thereby in the second circuit, and a 25 manually operable switch for making said third circuit; and means for maintaining the relay energized, independent of the manually operable switch, but dependent upon the movable contact engaging the second fixed contact.

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