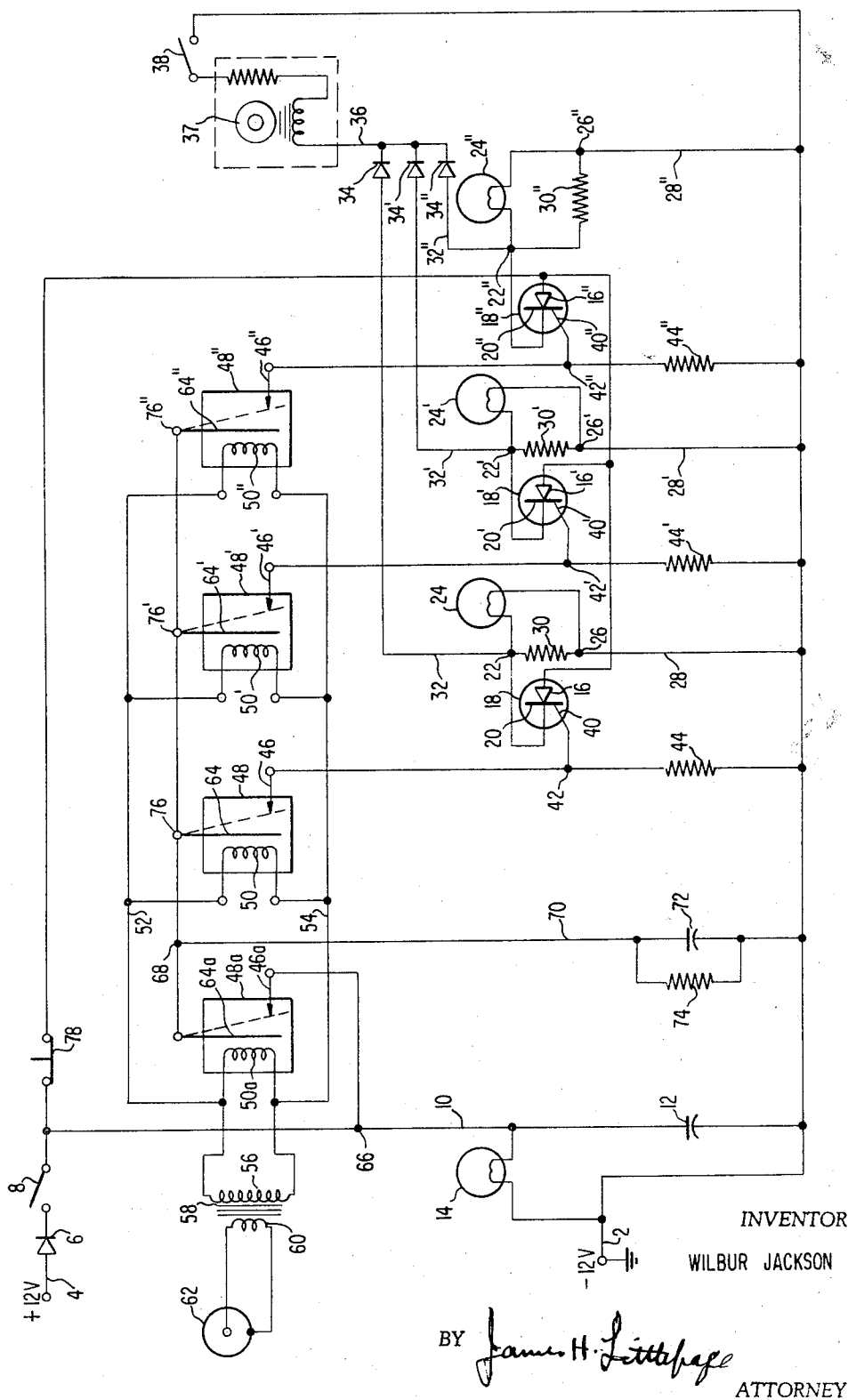


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REED DRIVEN SOLID STATE READ-OUT UNIT
RESPONSIVE TO PLURAL FREQUENCIES
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RESPONSIVE TO PLURAL FREQUENCIES

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ABSTRACT OF THE DISCLOSURE

A receiver responsive to plural frequencies is disclosed. Plural resonant reed relays responsive to the proper combination of frequencies complete an alarm circuit through SCR switching elements.

This invention relates to a reed-driven solid state read-out system for tone-code signals. The subject invention is related to that disclosed in my co-pending application Ser. No. 464,491, filed June 16, 1965 and now Patent No. 3,334,551 entitled Flip-Flop Alarm System With Lamp Test Circuit.

The object of this invention is to provide a read-out unit which is responsive to two or more tone-code signals wherein one of the tone-code signals is what may be termed an "address signal," and the other signals are what may be termed "name signals," and wherein an address signal must precede any of the other name signals before the system will respond. The subject unit is adapted to be located at a central station for monitoring the operation of several condition-sensing devices at a remote station. Upon attainment of a condition sensed by one of the devices, the remote station transmits two tone-code signals, one tone, i.e., the address tone, identifying the remote station and the other tone, i.e., a name signal, identifying the particular sensing device which has been activated. By utilizing several of the subject units, each responsive only to a particular address signal, a condition at a corresponding number of remote stations can be monitored with a minimum number of tone-code frequencies.

These and other objects will be apparent from the circuit diagram which constitutes the sole figure of the drawing.

Referring now to the circuit diagram, in which prime and double-prime numerals and those bearing the suffix *a* denote elements previously described with corresponding plain numerals, the ground conductor 2 and the positive conductor 4 are adapted to be connected to a suitable source of power in this example of twelve volts direct current, the positive conductor being provided with the customary protective diode 6 and on-off switch 8. A lead 10 from the positive conductor is connected to the ground conductor through a capacitor 12, across which is connected an on-off indicator lamp 14.

Connected to the positive conductor 4 are the cathodes 16, 16' and 16'' of three silicon controlled rectifiers, SCR 18, 18' and 18''. Since the power circuits of the SCR's are identical, only one will be described.

The cathode 20 of SCR 18 is connected at point 22 to one side of a signal lamp 24, the other side of which is connected at point 26 to ground lead 28. A bias resistor 30 is connected between points 24 and 26. From point 24, the output circuit from SCR 18 is connected via lead 32 through a protective diode 34 to the energizing circuit 36 of a bell 37, which circuit returns to ground via a disabling switch 38. Hence, it will be apparent that if the trigger electrode 40, 40' or 40'' of any of the SCR's 18, 18' or 18'' is energized with a firing pulse, the corresponding signal lamp 24, 24' or 24'' will be energized and, assuming that switch 38 is closed, bell 37 will ring.

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The control electrode, or trigger 40 of SCR 18 is connected to ground via a bias resistor 42 and also to the contact 46 of a resonant reed relay 48, the winding 50 of which is connected across conductors 52, 54 which lead from the secondary winding 56 of an input transformer 58, the primary winding 60 of which is connected to a tone input jack 62. The tone input signals from a remote station feed into the tone input jack. Reeds 64, 64' and 64'' of resonant reed relays 48, 48' and 48'' are each tuned so as to resonate to a different tone signal, which corresponds to the "name" of the respective device being monitored at a remote station. However, reeds 64, 64' and 64'' are normally not energized so that reception of only a "name" signal will not fire any of the SCR's 18, 18' or 18''.

Energization of reeds 64, 64' or 64'' is accomplished as follows. Also connected across the secondary winding 56 of input transformer 58 is the control winding 50a of a resonant reed relay 48a whose contact 46a is connected to the positive power supply conductor 4 at point 66 via conductor 10. Reed 64a is connected at point 68 to a charge circuit 70 which includes capacitor 72 across which a resistor 74 is connected. Reed 64a and ground circuit 70 are also connected at points 76, 76' and 76'' to reeds 64, 64' and 64'' of resonant reed relays 48, 48' and 48''.

The operation of the circuit is as follows. Reed 64a is tuned to the frequency representative of the "address" of the remote station of which the subject unit is a monitor. Upon receipt of an "address" tone signal, reed 64a resonates and charges capacitor 72, and the voltage appearing across capacitor 72 also appears on each of reeds 64, 64' and 64''. If then a "name" signal corresponding in frequency with the resonant frequency of any of reeds 64, 64' or 64'' is received, the appropriate one of the latter will resonate, engage its contact 46, 46' or 46'', and thus feed a positive firing pulse to the trigger of the associated SCR so as to energize the corresponding signal lamp 24, 24' or 24'' and bell circuit 36. The bell may be disabled, but a signal lamp, once lit, will stay on until the normally closed reset switch 78 is opened.

The invention is not limited to the details disclosed and described herein, but is intended to cover all substitutions, modifications and equivalents within the scope of the following claims.

I claim:

1. A solid-state read-out device for tone signals comprising, in combination, an input circuit adapted to receive multi-tone-code signals from a remote station which are characterized by a tone code signal of one frequency characteristic of the identity of the station and a plurality of other tone code signals of different frequencies respectively characteristic of activated sensing devices at said station, first, second and third resonant relays each including a control winding, a reed element and a contact element engageable by the reed element upon resonance thereof, first and second silicon-controlled rectifiers each having a control circuit and a normally open controlled circuit closable upon energization of the control circuit with a firing potential, an ohmic connection between the control elements of the first and second rectifiers respectively with one of said elements of the second and third relays, an ohmic circuit connecting the others of said elements of the second and third relays with one of said elements of the first resonant relay, a power circuit including power input connections and a pair of ohmic conductors leading therefrom, the controlled circuits of said first and second rectifiers being connected across said power circuit, first and second electrically energizable indicator means respectively connected in series with the power circuits of said first and second rectifiers, a connection between one conductor of said power circuit and the other element of the first resonant relay, and

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a capacitor and a resistor in parallel therewith connected between the other conductor of the power circuit and the ohmic circuit connecting said one element of the first resonant relay with said other elements of the second and third resonant relays.

2. The combination claimed in claim 1, and a normally closed reset switch in one of the ohmic conductors between the power input connection therefor and the power circuits of said first and second rectifiers.

3. The combination claimed in claim 2, said electrically energizable indicator devices comprising indicator lamps, and an energizing circuit for an electrically energizable

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audible alarm connected between one of the ohmic conductors of said power circuit and each of the controlled circuits of said rectifiers between said rectifiers and the other ohmic conductor of said power circuit.

5 4. The combination claimed in claim 3, and a disabling switch in the energizing circuit of the audible alarm.

No references cited.

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