

[72] Inventor **Alan Samuel Nusbaum**
Phoenix, Ariz.
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[73] Assignee **Motorola, Inc.,**
Franklin Park, Ill.

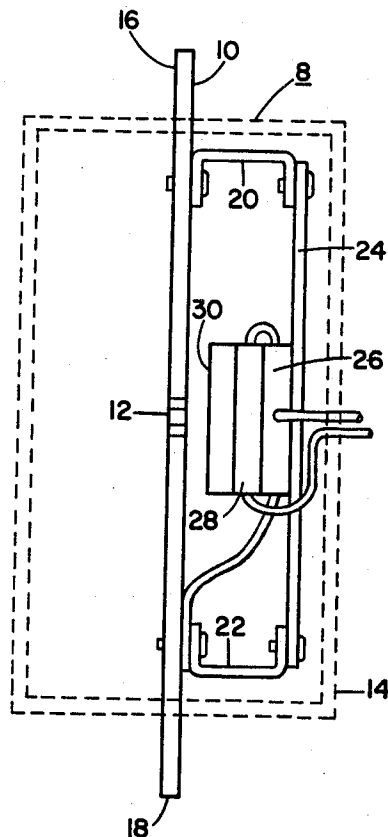
[56] **References Cited**
UNITED STATES PATENTS
3,161,131 12/1964 Kilmer..... 102/24
2,911,504 11/1959 Cohn..... 337/296
2,763,752 9/1956 Paetow..... 337/182
1,966,466 7/1934 Smalley..... 337/182(X)
FOREIGN PATENTS
943,070 5/1956 Germany..... 337/185

[54] **REMOTE FUSE DESTRUCTION DEVICE**
5 Claims, 3 Drawing Figs.

[52] U.S. Cl..... **337/1, -**
317/234(4), 337/182
[51] Int. Cl..... **H01h 85/00**
[50] Field of Search..... 102/24;
337/160, 182, 185, 296, 1; /; 317/234 (4)

Primary Examiner—Bernard A. Gilheany
Assistant Examiner—Dewitt M. Morgan
Attorney—Mueller & Aichele

ABSTRACT: The combination of a fuse and a means which is controllable from a distance, as by radio transmission and reception, to open a circuit by destroying the fuse.



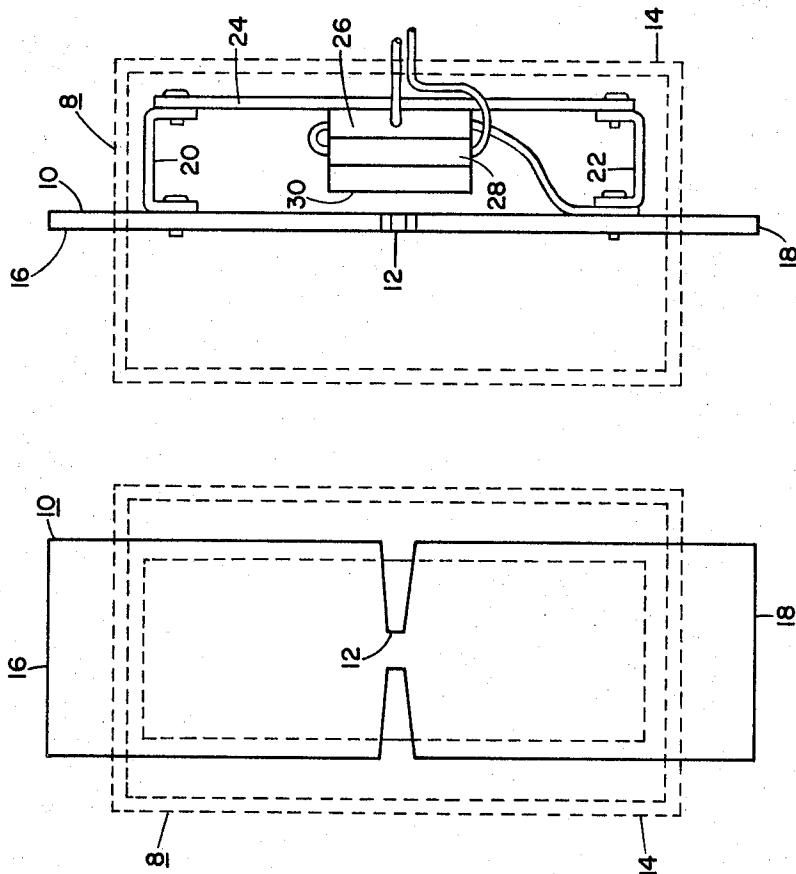


Fig. 2

Fig. 1

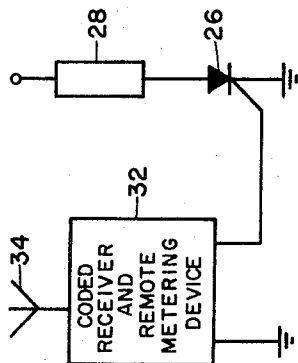


Fig. 3

INVENTOR
Alan Samuel Nusbaum

BY
Mueller, Aichele & Rauner
ATTY'S.

REMOTE FUSE DESTRUCTION DEVICE

BACKGROUND OF THE INVENTION

The public utility companies that supply electricity must from time to time read meters in preparation of bills and when the customer's service is to be discontinued, the company must disconnect the electrical supply at the customer's residence. One method of disconnecting the electrical supply is for an employee of the company to go to the customer's residence and remove the main fuses. Since the disconnect order may be issued at a time not related to the normal time of reading the meter, this method of disconnection involves a special trip by the employee to the customer's residence and is therefore inconvenient and expensive, and furthermore the disconnect order may not be executed until sometime after it should have taken place.

An object of this invention is to provide a means for disconnecting the electrical supply from a customer's residence promptly and inexpensively.

SUMMARY OF THE INVENTION

In accordance with this invention an electrical fuse is provided which has a thermal means mounted in sufficiently close vicinity to the fuseable link portion of the fuse at the customer's residence as to melt the fuseable link and thereby to destroy the fuse whereby the customer's electrical service is disconnected. The thermal means may include an electrical switch means such as a silicon-controlled rectifier (hereinafter SCR) in series with a squib and may include exothermic materials, that is, materials which produce more heat when heated by the squib than the heat applied thereto. Suitable means such as a coded receiving means, which may be any sort of a receiver including a radio receiver, may be provided to apply control potential to the SCR. If remote metering means are provided to read this customer's electrical meter, the remote metering means may include controlling means to apply the control potential to the SCR when the customer's service is to be disconnected.

BRIEF DESCRIPTION OF THE DRAWING

The invention will be better understood upon reading the following description in connection with the accompanying drawing in which:

FIG. 1 is an elevational view of the fuse of this invention,

FIG. 2 is an elevational view of the fuse of FIG. 1 viewed, however, at a 90° angle from the view thereof taken in FIG. 1 and FIG. 3 is a diagrammatic showing of an electrical circuit in which the fuse of FIGS. 1 and 2 may be connected.

DESCRIPTION

Referring to FIG. 1, a fuse 8 which includes a fuse link 10 is provided. This fuse link 10 may be a thin flat plate of fuseable material having a narrow necked down portion 12 about halfway between its ends 16 and 18. The central portion of the fuse link 10 may be included in a container 14. The bladelike ends 16 and 18 of the fuse link 10 may fit into contactors (not shown). When the fuse 8 is a main fuse of a residence, all the current supplied to that residence flows through the fuse, whereby removal of the fuse or its destruction disconnects the residence from the electrical power supply. FIG. 2 illustrates a means to destroy the fuse 8.

As shown in FIG. 2, spacers 20 and 22 are fixed to the link 10 at opposite sides of the neck portion 12 and a bridge means comprising an insulation board 24 is fixed to the spacers 20 and 22, whereby the board 24 is spaced from the link 10. An

SCR 26 is fixed to the board 24 on the side thereof towards the link 10, or the SCR 26 is deposited on a chip which is fixed to the board 24, and a squib 28 is fixed to the exposed side of the SCR 26. An exothermic material 30, that is a material which produces heat when it is self heated such as any easily combustible material, may be applied to the free face of the squib 28.

The circuit for the SCR 26 and for the squib 28 of FIG. 2 is shown in FIG. 3. When the proper coded signal is sent to a coded receiver 32, which may be a radio receiver having an antenna 34, a control signal is applied to the control electrode of the SCR 26. The main electrodes of the SCR 26 are connected respectively to ground and to one terminal of the squib 28, whose other terminal is connected to any convenient point of the electrical supply such as to the fuse link 10 at the location of one of the spacers 22. When the receiver 32 applies a control voltage to the control electrode of the SCR 26, current flows through the squib 28, causing it to become heated and causing the exothermic material 30 to ignite, heating the fuse link 10 sufficiently so that the necked down portion 12 of the fuse link 10 will melt, opening the main fuse 8 of the residence and thereby disconnecting the customer's electrical service.

If the heat produced by the squib 28 is itself sufficient to melt the necked down portion 12 of the fuse link 10, then the exothermic material 30 may be omitted. It is noted that the SCR 26, the squib 28 and the exothermic material 30 are all located within the container 14 and that the connections to one of the main electrodes of the SCR 26 and the connection to the control electrode of the SCR 26 are taken out of the container 14 at any convenient location.

I claim:

1. A fuse comprising:

a fuse link having a meltable portion,

support means fixed to said link and extending in the vicinity of said meltable portion,

a semiconductor switch having two main electrodes and mounted on said support means and having one main electrode connected to said link at one side of said meltable portion,

an electrically controlled heat producing means having a terminal mounted on said support means and facing said meltable portion, and

the other main electrode of said semiconductor switch being connected to a terminal of said electrically controlled heat producing means.

2. A fuse comprising:

a fuse link having a meltable portion,

a bridge means bridging said meltable portion,

a silicon-controlled rectifier mounted on said bridge portion and having a main electrode connected to said link at one side of said meltable portion,

a squib mounted on said bridge and facing said meltable portion, and

the other main electrode of the said silicon-controlled rectifier being connected to a terminal of said squib.

3. The invention as expressed in claim 2 in which said meltable portion, said bridge means and said silicon-controlled rectifier are mounted in a single container.

4. The invention as expressed in claim 3 in which an exothermic material is provided in contact with said squib and also in said container.

5. The invention as expressed in claim 3 in which a connection to the other terminal of the squib and the connection to the other main electrode of said silicon-controlled rectifier extends through said container.