

Time switch from old alarm clock

Using a clock to perform various functions at nominated times is not a new idea, but it does not seem to have been exploited much beyond the simple alarm clock concept. Here are some suggestions on how to make and use a versatile time clock.

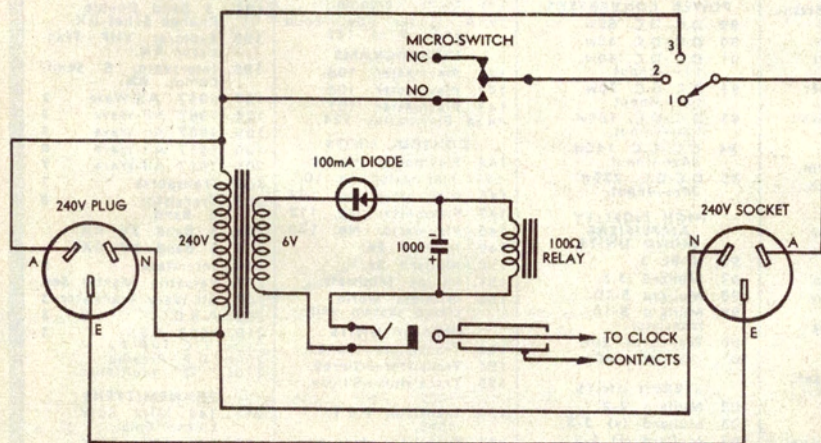
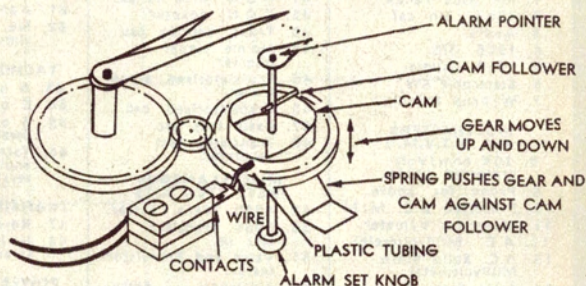
I like to listen to my portable radio at night, but the trouble is that I fall asleep and the batteries are flat by morning. Batteries being dear enough, I decided to make a time switch. The finished product proved very successful and, with the mains relay, could switch on almost any electric appliance — radio, frypan, lamp, TV receiver, etc. — at any set time, and off again 30 minutes to three hours later. It would be especially suitable for switching on an electric blanket.

I had an old clock and some contacts salvaged from an old tape recorder. The clock was a cheap type that has the alarm dial separate, i.e. the alarm pointer spindle is not concentric with those of the main hands.

mount them, drilling a hole in the frame if needed.

Solder a heavy gauge wire from one of the contacts and bend the wire so that it rests on the gear without fouling anything. It is a good idea to insulate

At right is a diagram of a typical clock gear mechanism with contacts fitted. Below is the additional circuitry needed for mains switching.



S1 POSITIONS:-
1: OVERRIDE CLOCK, SWITCH OFF
2: CLOCK CONTROLLED
3: OVERRIDE CLOCK, SWITCH ON

The contacts could be almost any type from a record-player or tape recorder.

The glass was removed from the clock by easing the rim off with a screwdriver. The hands were then pulled off (it is not necessary to note the time) and the face was pulled off.

(Editorial Note: In some types of clocks it is easier to gain access to the mechanism by removing the keys from the rear spindles, removing the back and, finally, the entire mechanism.)

On the alarm spindle there should be a gear with a cam attached. By turning the alarm set knob this gear should move backward or forward. If all this checks out, see if there is room behind the face to mount the contacts so they are near this gear. If there is, arrange the contacts suitably and this wire from the clock with some plastic tubing glued over it.

Wire up the contacts in series with a light and battery. Turn the alarm set knob and note through how many degrees of rotation the bulb stays alight. Bend the soldered wire or the contact until a suitable time is found (90 degrees would equal three hours in the "on" state). I found one hour suitable (30 degrees). When satisfied, check that the clock is functioning correctly and wire up the contacts, passing the two wires through a hole in the case.

Put back the face and place the alarm hand on (in any position) and turn the alarm knob to a certain time, say 3.00. Then turn the hands knob till a click is heard when the alarm goes off, and put on the hands to the time wires were then passed out to the clock.

This set-up is quite safe for low voltages, but to switch mains voltages

shown by the alarm hand, 3.00. Check this by turning the alarm hand to a different time and then turn the hands till the alarm goes off. Compare the times shown on the alarm dial and the hands dial. The difference should not be greater than 10 minutes. Turn the hands to 12 and align the hour and the minute hand. Replace the glass.

To use the clock to operate my portable radio, I connected wires to two pieces of thin brass separated by a piece of plastic and fitted this between one battery end and its holder. The

it is necessary to build up the extra circuit shown.

This circuit is basically a relay with its own power supply. A small transformer is adequate; secondary current will not exceed 100mA. A relay with a micro-switch is needed.

The capacitor not only smooths out the pulsating DC, but also minimises relay chatter as the contact is opened. The contacts open very slowly and the relay may open and close several times as resistance between the contacts varies. The capacitor holds the relay in until the switch-off is definite. Any diode capable of passing 60mA at least, would do for the rectifier. The switch is a single pole double throw type.

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(Editor's Footnote: "Reader Built It" projects are published for the general interest of experimenters and as a source of ideas. Based on readers' contributions, they have not been tested in our laboratory and we cannot accept responsibility for them.)

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