possible to send another dot or dash before the previous one is finished. Another 555 timer serves as a built-in side-tone monitor.

However, some operators like to vary the *dot–dash* length to suit their own taste. This is particularly true with those operators that originally used a semi-automatic key—sometimes called a "bug." Using the keyer built around a 555 timer that is shown in Fig. 9-8,
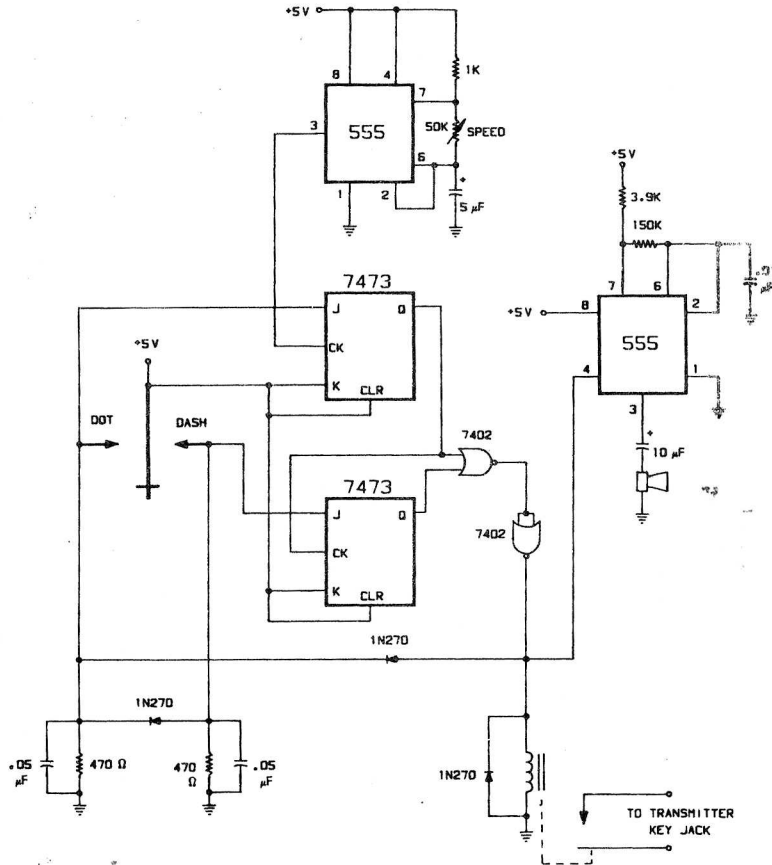

Fig. 9-7. An electronic keyer circuit.

the operator is free to vary the *dot–dash* ratio. As with the previous keyer circuit, a 555 timer is used as a side-tone monitor.

The Federal Communications Commission requires the ham radio operator to identify his station by giving his call letters at least every 10 minutes. This can be a problem, especially during lengthy conversations when it is difficult to keep track of the time. Compliance with this regulation is simplified by using a 555 timer as a one-shot as
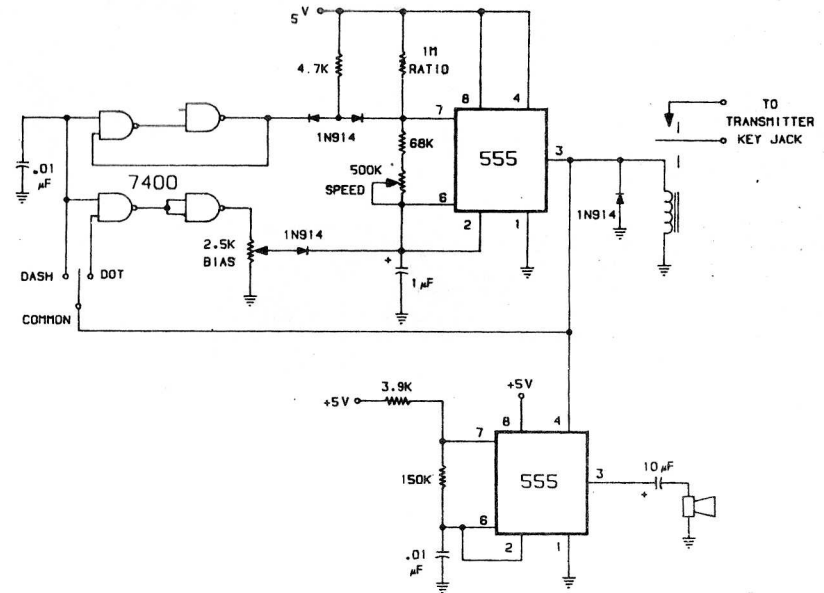
Fig. 9-8. A keyer circuit that can be adjusted by the operator. (Copyright © 1973 Communications Technology, Inc.)

shown in Fig. 9-9, so that a visual 10-minute warning indicator can be made. At the beginning of a conversation, the reset switch is pressed causing the green timing LED to light. After 10 minutes, as set by R1, the red LED will light to warn the operator that he must identify. The cycle can be reset at any time by simply pressing the reset switch.
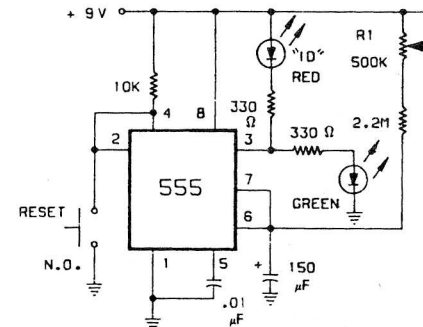
Fig. 9-9. 10-minute timer. (Copyright © 1974 Communications Technology, Inc.)