

FIG. 1

HAVE YOU EVER BEEN STARTLED BY YOUR own doorbell? I have heard some doorbells that are so harsh and startling that they are sure to wreck anyone's nerves. But my doorbell is not of that type—at least not any more.

But if your bell *is* of that type, don't despair. I'll show you a way to prevent your quiet home from being disturbed. You can replace your harsh-sounding, nerve-wracking bell with what I'll call a "mild dose of sound stimulation." When the doorbell is pushed, you'll hear a low tone that will "slide up" to a higher frequency.

Figure 1 shows the sliding-tone doorbell circuit. It's made up of two main parts: an AF (Audio Frequency) oscillator and a variable resistance.

The frequency of the AF oscillator is determined by two factors. The first is the value of the coupling capacitor, C1. The second is the value of the resistance connected between the base of Q1 and ground. That resistance, which we'll call R_{BG} , is equal to $(R1 + R2) \parallel R3$.

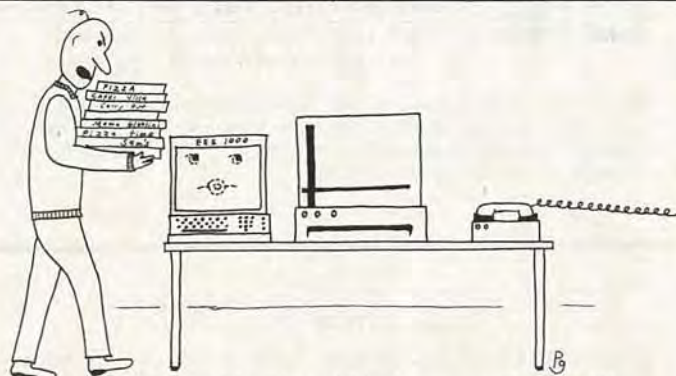
When either of those two factors increases, the frequency of oscillation will

decrease. Thus, whenever R_{BG} or C1 decreases, the frequency will increase.

First, assume that S1 is closed and R2 has been adjusted to produce a pleasant, low-frequency tone. Capacitor C3 will charge through R6 until it reaches such a voltage that will cause diode D1 to conduct. When that happens, the value of R_{BG} is paralleled by R4. Thus, because the total resistance R_{BG} decreases, the output tone slides up in frequency. Capacitor C3 will continue to charge until the voltage across D2 and D3 causes those diodes to conduct. Then R_{BG} is paralleled also by R5, the total resistance again decreases, and the oscillator's frequency again increases.

If you're not satisfied with how the "bell" sounds, there are several things you can do. First, if you want to change the tone variation, feel free to try different values for R2, R4, and R5. And if you want to vary the sliding speed of the tone, then you can try different values of R6.

As with the rest of this easy-to-build circuit, the transistor types are not critical. Feel free to experiment!—Tseng C. Liao



"One more stunt like this and I'll cut your modem cord!"