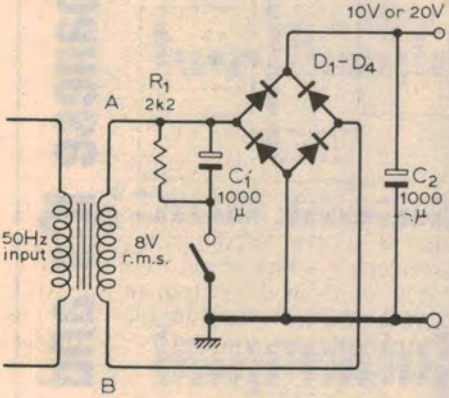
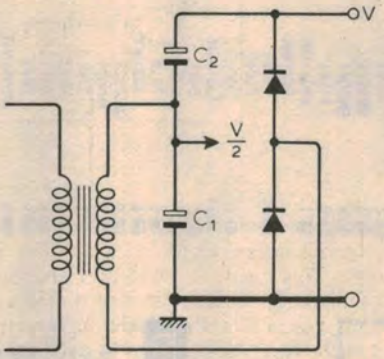
Single switch doubles bridge voltage



(a)



(b)

In figure (a), with the switch open, D1 to D4 act as a full wave rectifier feeding C2. When the switch is closed, C1 becomes charged via D4 when A is positive with respect to B, and then feeds C2 via D3 when B is positive with respect to A. Capacitor C1 therefore becomes charged to the peak voltage of the AC input, and C2 becomes charged to twice the peak voltage. Diodes D1 and D2 are both reverse-biased and do not conduct. Resistor R1 discharges C1 when the switch is opened.

If the switch facility is not required, the circuit of figure (b) is preferable because the ripple frequency of V is 100Hz, rather than the 50Hz of usual doubler circuits, and is hence easier to smooth.

(By D. D. Williams, in "Wireless World" June, 1979.)