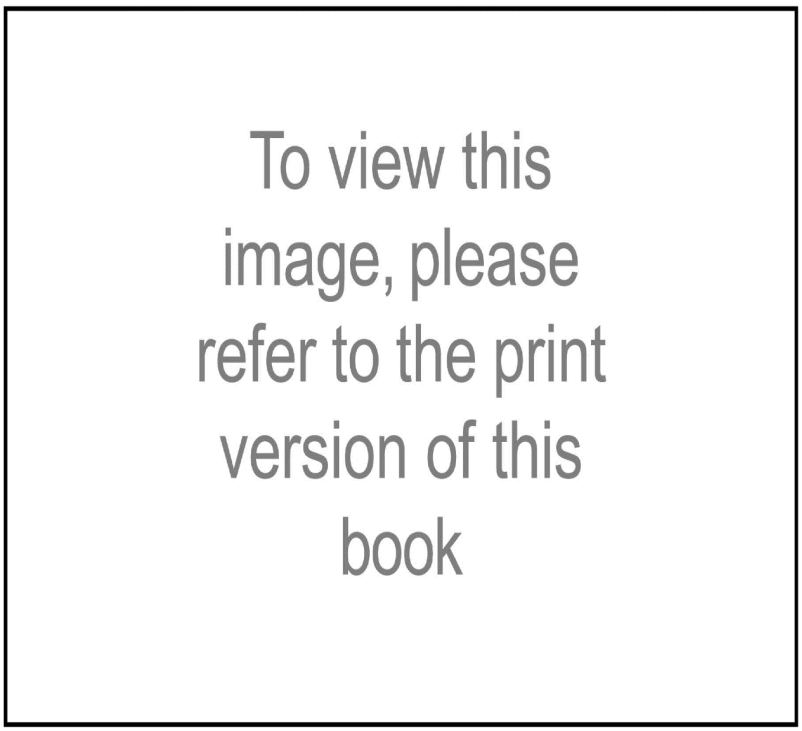

Fig. 13-2. *Dual-element de-icing system—twin-engine aircraft.*

System Components

An electrothermal propeller de-ice system can operate on either a 14 or 28-VDC system. HOTPROP(R) de-icer systems have etched foil, but with other, dual element systems, the actual de-icer elements are made of hand-wound conductive wiring embedded in a thin fabric and rubber sheet that is bonded to the first third of the leading edge of the propeller blades. The principle is simple, but putting the principle into practice is what causes trouble. The problem is how do you get electrical power out to a rotating propeller? The solution—and weak link—is a slip-ring and brush-block assembly.

This copper distribution center transfers electric current to the rotating propeller de-icers from spring-loaded carbon brushes. The brushes, fixed to the engine, maintain constant contact with the slip ring as it rotates with the propeller. Potential problems range from uneven wear to loss of conductivity as a result of oil, grease, and carbon covering the slip ring. A common pilot-induced problem results if the system is turned on and left operating for more than approximately 5 minutes when the engine is not running in ambient temperatures higher than 100 degrees F. It will most likely burn up the propeller de-icer.

With a manual system there is no timer, so the pilot is required to keep flipping the switch to activate the system. The timer in an automatic system continuously cycles the elements at 34-second intervals. Most systems also have an ammeter, which