bulb across the circuit. The supply has now completed a cycle and has returned to the standby state.

2. Gauge Construction

Gauges used are of the four terminal type, shown in Fig. 23. They are produced by a photoetch technique and are initially attached to a plastic film.[11] The gauges are easily removed from the film by immersion in boiling acetone. The sensitive element spans less than a 0.125" square while the gauge depth is approximately 0.0008 inches. The aspect ratio (width/depth) is about 5 for the wire in the sensitive element. The resistance of the sensitive element is two ohms while that of the terminal leads is about one ohm.

In target construction, the gauge is mounted directly between two slabs of the material under observation if that material is a nonconductor. If not, the gauge is insulated from the material by a 0.00035 inch mylar film. The bonding is effected by air-evacuated epoxy. The dimension of the sandwich in the latter case is approximately 0.002 inches. Since the shock wave transit time of this sandwich is on the order of ten nanoseconds and since in general there is a sample-epoxy impedance mismatch, fidelity of the wave profile will deteriorate to an extent depending on the magnitude of the mismatch. In non-conducting materials this risetime effect has not been noticed. Stress profiles at the 35 kb level in CdS have been observed by both the quartz gauge and manganin gauge technique. Allowing for the impedance-mismatch with quartz they were found to be closely comparable. In constructions involving both conducting and nonconducting samples, the gauge terminal leads were brought out the sides of the sample. This allowed recording times of from two to five microseconds before the gauge leads were either severed or shorted, disrupting the current flow. This recording time is sufficient for most applications. Figure 24 shows a representative recording obtained with this system.