FIG. 6.38. Sectional views of the combination horn and double-voice coil, direct radiator loudspeaker. In the voice coil circuit, $e =$ the internal voltage of the generator. $r_{EG} =$ the internal electrical resistance of the generator. r_{E1} and $L_1 =$ the electrical resistance and inductance of the large coil. r_{E2} and $L_2 =$ the electrical resistance and inductance of the small coil. $C_E =$ electrical capacitance. In the mechanical network, $m_1 =$ the mass of the large coil. $m_2 =$ the mass of the small coil. C_{M2} and $r_{M3} =$ the compliance and mechanical resistance of the corrugation separating the large and small coils. $m_3 =$ the mass of the cone. r_{MS} and $C_{MS} =$ the mechanical resistance and compliance of the suspension system. m_4 and $r_{M2} =$ the mass and mechanical resistance of the air load on the front of the cone. $C_{M1} =$ the compliance of the chamber behind the cone. $z_{M1} =$ the mechanical impedance at the throat of the horn. f_{M1} and $f_{M2} =$ the mechanomotive forces generated in the large and small voice coil sections. The graph shows the pressure response frequency characteristic of the combination horn and direct radiator loudspeaker. The overlap between the horn and direct radiator action is shown by the dotted and dashed characteristics. (After Olson and Hackley.)