How does the stacking gel increase resolution during SDS-PAGE?

To increase the resolution of protein separation during SDS-polyacrylamide gel electrophoresis, a discontinuous buffer system is often used. The stacking gel contains chloride ions, the leading ions, which migrate more quickly through the gel than the protein sample, while the electrophoresis buffer contains glycine ions, the trailing ions, which migrate more slowly. The protein molecules are trapped in a sharp band between these ions. As the protein enters the separating gel, which has a smaller pore size, a higher pH and a higher salt concentration, the glycine is ionized, the voltage gradient is dissipated and the protein is separated based on size.