Bending at the base of a dragged-out viscous thread MAURICE BLOUNT, JOHN LISTER, ITG, DAMTP, University of Cambridge — We consider steady flow of a slender viscous thread falling from a nozzle onto a moving horizontal belt. We analyse the asymptotic limit of a very slender thread, and show that it has a boundary-layer structure in which bending stresses only become important near the belt, where they support a vertical stress and allow the velocity and rolling conditions to be satisfied. The outer solution is analogous to a viscous catenary, with velocity fixed at the belt and at the nozzle. There are three asymptotic regimes, with distinct structures, corresponding to the cases that the belt speed is larger than, smaller than, or close to the velocity of a freely falling thread. The implications for the onset and amplitude of meanders in the ‘fluid-mechanical sewing machine’ are explored.