



Figure 11.6 Philips crystallizer.

and grow in an external crystallizer with scrapers to prevent the crystals from encrustation. Then, the slurry is transported into the washing column and forced down by the reciprocating piston. The washing liquid reflux flows from the bottom (the melting zone) upwards counter currently through the crystal bed and out through the wall filter on the top of the column as the residue liquid. The product is collected at the bottom of the purifier. Pulse, instead of piston, could also be used to force the crystals to move downwards in the purifier.

11.4.1.6 Brodie Crystallizer

The Brodie crystallizer (Figure 11.7),^{3,28,35} developed in 1971 in Australia, has a long, horizontal freezing section consisting of a set of cooling scraper crystallizers, which guarantees a long enough time to lower the crystal growth rate and get crystals as pure as possible. Besides, the feeding point is in the middle of crystallizing section and a countercurrent flow is formed between the crystals and the melt to avoid growing all crystals from the least pure melt residue. The slurry is transported by using a spiral conveyor to the vertical purification column and forms a countercurrent contact mass transfer process, with part of the molten product forming in the bottom melter. To avoid channeling and crystal caking