Deep learning architectures exhibit a critical drop of performance due to catastrophic forgetting when they are required to incrementally learn new tasks. Contemporary incremental frameworks focus on object classification or detection while in this work we formally introduce the incremental learning problem for semantic segmentation in which a pixel-wise labeling is considered. To tackle this task we propose to freeze part of the network and to distill the knowledge from output logits or from intermediate features of the previous model to retain the information about previously learned classes, whilst updating the current model to learn new ones. In opposition to recent methods, we do not store any image from previous training steps and only the last model is needed for adaptation. The experimental evaluation on VOC2012 shows the validity of the proposed methods.