In this work we focus on the physical explanation for the deflection of a couple of Multiple Coronal Mass Ejections (MCMEs) observed between September 21-22, 2009. For the first event, STEREO/EUVI and /COR1 data allowed us to reconstruct the 3-D trajectory of the prominence eruption via triangulation technique and of the resulting CME via polarization ratio method. Results show that the first MCME originated from the southern hemisphere and showed a deflection of about 15 degrees toward the heliospheric current sheet during the propagation in the COR1 field of view. This trajectory is similar to the one followed by the second MCME, occurring 8 hours later, originating from the same source region (as also shown by Forward Modelling technique), not associated with a prominence eruption. Magneto-hydrodynamic (MHD) simulations, starting from an asymmetric coronal field configuration that mimics the potential field source surface extrapolation, were performed. By applying localized shearing motions, a first MCME is initiated in the simulation, with similar structure and kinematic as the observed event. The CME gets deflected toward the current sheet of the larger northern helmet streamer due to an imbalance in the magnetic pressure and tension forces and finally gets into the streamer. In a second simulation, the second MCME is also reproduced simply by changing the strength of the global dipole, demonstrating that the overlying field strength is a crucial parameter in order to reproduce the observed evolution.