

APPARATUS AND METHOD FOR PERFORMING SURFACE TRANSITION ON MAGNETIC SURFACES

Abstract

A mobile robot capable of performing surface transition on ferromagnetic surfaces is provided. The robot comprises: a chassis; at least one driven magnetic wheel assembly rotatably mounted to the chassis and operative to drive the chassis; at least one non-driven magnetic wheel assembly rotatably mounted to the chassis, wherein at least the driven magnetic wheel assembly or the non-driven magnetic wheel assembly comprises: a non-magnetic wheel operative to maintain contact with one of the ferromagnetic surfaces; a magnetic assembly rotatably coupled to the non-magnetic wheel, wherein the magnetic assembly comprises: a magnetic flux producer; and a magnetic flux distribution controller which, in cooperation with the magnetic flux producer, is operative to produce a varying magnetic force on a ferromagnetic surface adjacent to the magnetic assembly by varying a gap distance therebetween and/or a surface area of the magnetic flux distribution controller in proximity with the ferromagnetic surface.

(Figure 2)