SPIRAL MAGNETIC LINEAR TRANSLATING MECHANISM

ABSTRACT OF THE INVENTION

A spiral magnetic linear translating mechanism (46) for use with a wafer processing system which includes a plurality of evacuatable housings (12) connected in a series to form a processing line comprises at least one wafer support structure (24) which is mounted to move on a track (14) through the housings (12) along the processing line. The structure (24) includes a base (36) disposed proximate a wall (38b) of the housing (12) and includes a plurality of magnetic thread segments (34) extending thereon to face the wall (38b). Outside of the housing (12), a cylindrical shaft (48)is mounted proximate the wall (38b). An elongated magnetic drive (52) with successive sections is wound spirally around the shaft (48) to rotate with the shaft (48) so that the sections of the drive face the wall (38b) opposite the thread segments (34). The magnetic thread segments (34) are attracted to the magnetic drive (52), thus coupling the wafer support structure (24) to the shaft (48) such that when the shaft (48) rotates the thread segments (34) are exposed to different successive sections of the drive (52) located further along the shaft (48) and the wafer carrier (24) is driven linearly along the track (14) and through the housing (12). Preferably, the magnetic thread segments (34) and spiral magnetic drive (52) are made up of individual magnetic elements (70, 72, 74) alternately magnetically polarized at their outer extremities with opposite magnetic polarities so that the individual thread segment elements (70, 72, 74) are attracted to drive elements (64, 66, 68) having opposite magnetic polarities. In an alternative embodiment, the shaft (48) includes a plurality of magnetic drives (80) wound spirally thereon. The shaft (48) is covered with a non-magnetic sleeve to protect the magnetic drive (52).

1 This Sheet Has Been Replaced

