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(54) Title: FLUX SHAPING POLE PIECES FOR A MAGNETIC DISPLACEMENT SENSOR

(57) Abstract: A displacement sensor includes a magnet assembly having a housing for mounting to one of first and second relatively moveable elements. A magnet assembly is mounted to one element and defines a longitudinal space having an axis along its length. The magnet assembly includes at least one magnet having a north and a south pole that supply fringing magnetic flux in the longitudinal space and a flux-shaping pole piece on each of the north and south poles. A magnetic field sensor assembly has a housing for mounting to the other of the first and second elements for movement along an axis in the space parallel to the magnet assembly. In one embodiment, each of the flux-shaping pole pieces has a pentagon shape in a plane of primary flux pattern, forming a first face confronting the longitudinal space between the first and second magnets. In another embodiment, the magnet is a cylindrical magnet adjacent the longitudinal space, and the first face of each flux-shaping pole piece is cylindrical and coaxial with the cylindrical magnet. Preferably, the pole piece has a frusto-conical face confronting the longitudinal space adjacent the cylindrical face.