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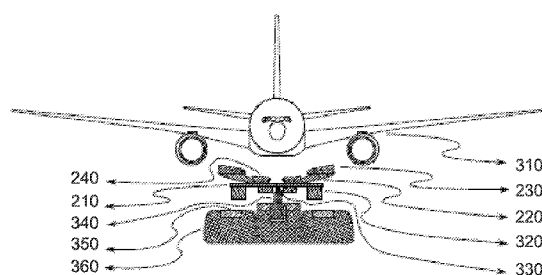


FIG. 3

(57) Abstract: Systems and methods for ground-based aircraft thrust systems are provided. In particular, some embodiments use an electromechanical thrust assembly to accelerate aircraft using ground-based energy for takeoff. The assembly can include one or more sleds, one or more maglev tracks, and/or one or more linear motors. Airplanes are loaded onto a sled (e.g., a saddle-shaped sled) that supports and balances the airplane instead of the landing gear aboard the aircraft. The sled levitates above the ground using high-density permanent magnet arrays. Magnetic levitation forces are varied along the assembly to account for lift provided by air-flow over the wings. An aircraft thrust system includes a magnetically levitated saddle-shaped sled with airbags that support an aircraft during takeoff acceleration coupled with a linear motor that spans the length of the distance needed for takeoff.