

The invention relates to mechanical engineering, in particular to additive technologies for the manufacture of gearwheels of planetary precessional transmissions.

The processes for additive manufacturing of gearwheels consist in the fact that deposition of the layer of polymeric material, which forms the core of the gearwheel tooth is carried out of dodecahedral cellular elements with a fine structure or of metal powders of dodecahedral cellular elements with a fine structure, at the same time deposition of the layer of polymeric material, which forms the surface layer of the gearwheel tooth, is carried out of diamond-type cellular elements with a coarse structure or of metal powders with the addition of a solid lubricant of rhomboid cellular elements with a coarse structure. The deposition of the layer of polymeric material of diamond-type cellular elements with a coarse structure on the surface of teeth with a convex-concave profile is carried out of polymeric material or metal powders of dodecahedral cellular elements with a fine structure. Deposition is carried out by sphero-spatial motion.

The devices for additive manufacturing of gearwheels comprise a housing with one or at least two nozzle heads with sequential action, a platform, at least one electric motor, at least one polymeric material feeder, a tripod and a computer control system.

The precessional transmissions comprise a pair of gearwheels, engaged with the possibility of performing frictional and rocking motions. The teeth of one gearwheel are made with a convex-concave profile, and the teeth of the other gearwheel are made with an annular profile. The surface layer of the tooth is made with a thickness of (0.1-0.2) fraction of the average thickness of the tooth or with a thickness of (0.2-0.5) mm.

Claims: 11

Fig.: 13