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(54) **Title:** LASER-JET LIQUID BEAM SELF-GENERATING ABRASIVE FLOW COMBINED MACHINING HEAD AND WORKING METHOD

(54) 发明名称: 一种激光-喷射液束自生磨粒流复合加工头及工作方法

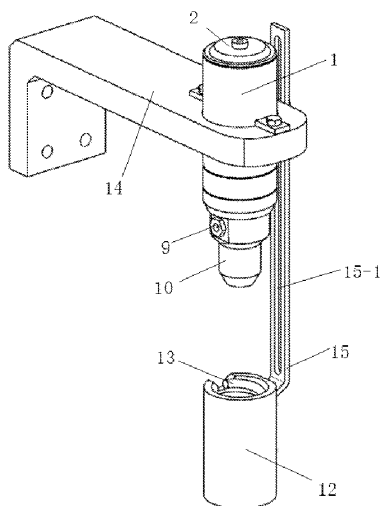


图 1

(57) **Abstract:** A laser-jet liquid beam self-generating abrasive flow combined machining head, comprising a jet mechanism and a cooling mechanism; the jet mechanism comprises a lens cone (1), a connecting portion (8) and a nozzle (10); one end of the connecting portion (8) is connected to said lens cone (1), and the other end thereof is connected to the nozzle (10) and extends into the interior of the nozzle (10), a flange (8-4) in close contact with the side wall of the nozzle (10) is provided at a part of the connecting portion (8) extending into the nozzle (10), and the part of the connecting portion extending into the nozzle forms an annular cavity with the side wall of the nozzle (10), the flange (8-4) is provided with a plurality of through-holes (8-5), the through-holes (8-5) are in communication with the annular cavity and the inner space of the nozzle (10), and a liquid injection port (9) is provided at a position of the side wall of the nozzle (10) where the annular cavity is located and is used for injecting a saline saturated solution of a set pressure into the annular cavity; and the cooling mechanism comprises a cooling cylinder (12) with openings at two ends, a cooling pipe (13) is provided inside the cooling cylinder (12) and is used for cooling the saline saturated solution jetted from the nozzle (10) and flowing through the cooling cylinder (12), so as to precipitate fine crystal grains from said solution. By using the combined machining head to work, the machining quality of a workpiece can be effectively improved.

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WO 2020/215715 A1

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— 包括国际检索报告(条约第21条(3))。

(57) 摘要: 一种激光-喷射液束自生磨粒流复合加工头, 包括喷射机构及冷却机构, 所述喷射机构包括镜筒(1)、连接部(8)及喷嘴(10); 所述连接部(8)一端连上述镜筒(1), 另一端连接喷嘴(10)并伸入喷嘴(10)内部, 连接部(8)伸入喷嘴(10)内的部分设有与喷嘴(10)侧壁紧密接触的凸缘(8-4), 并且与喷嘴(10)的侧壁形成环形空腔, 凸缘(8-4)设有多个通孔(8-5), 通孔(8-5)与环形空腔及喷嘴(10)内部空间连通, 所述环形空腔所在的喷嘴(10)侧壁位置处设有注液口(9), 用于将设定压力的盐类饱和溶液注入环形空腔; 所述冷却机构包括两端开口的冷却筒(12), 所述冷却筒(12)内部设有冷却管(13), 用于对由喷嘴(10)喷射出并流经冷却筒(12)的盐类饱和溶液进行冷却, 使其析出微细晶粒。利用该复合加工头进行工作, 能够有效改善工件的加工质量。