

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
27 February 2020 (27.02.2020)



(10) International Publication Number
WO 2020/041416 A1

(51) International Patent Classification:
B23Q 11/10 (2006.01)

(21) International Application Number:
PCT/US2019/047421

(22) International Filing Date:
21 August 2019 (21.08.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/721,224 22 August 2018 (22.08.2018) US

(71) Applicant: **HURCO COMPANIES, INC.** [US/US]; One
Technology Way, Indianapolis, Indiana 46268-0180 (US).

(72) Inventors: **ADAIR, David C.**; 6263 N. Tacoma Ave-
nue, Indianapolis, Indiana 46220 (US). **GROSS, Fred-
erick W.**; 4980 Jennings Drive, Carmel, Indiana 46033
(US). **VOLOVIC, Gregory S.**; 990 Fawn View Drive,
Carmel, Indiana 46032 (US). **TRAICOFF, Gerald**;

14927 Windmill Drive, Carmel, Indiana 46033 (US).
SZCZYPIORSKI, Nick; 11743 Wedgeport Lane, Fishers,
Indiana 46037 (US). **HAMMER, Donald**; 4178 Parliament
Way, Avon, Indiana 46123 (US).

(74) Agent: **PARKS, Cory Daniel**; 300 N. Meridian Street,
Suite 2700, Indianapolis, Indiana 46204 (US).

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,

(54) Title: DYNAMIC COOLANT DELIVERY SYSTEM WITH MULTI-AXIS ROTATION

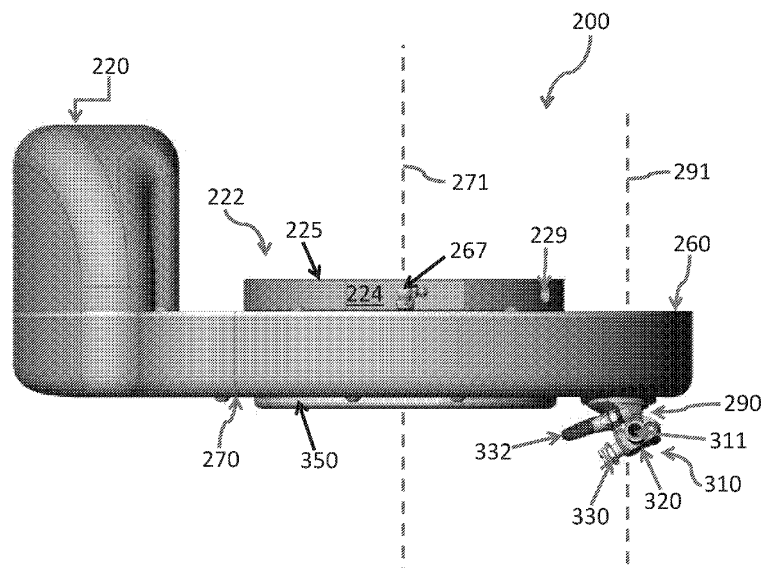


FIG. 9

(57) Abstract: A dynamic coolant system (200) for delivering coolant to a cutting tool coupled to a spindle (120) of a computer numerical control ("CNC") machine is disclosed. The dynamic coolant system comprises a platform (270) adapted to be coupled to the spindle (120) and rotatable about a first axis (271) and a nozzle (310) supported by the platform (270) and pivotable about a second axis (311). The nozzle (310) is in fluid communication with a coolant reservoir (302) and adapted to deliver coolant from the coolant reservoir (302) to the cutting tool (390).

[Continued on next page]



WO 2020/041416 A1

GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*