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## Patent Search

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### Abstract:

ABSTRACT METHOD OF CRYOGENIC BROACHING OF AISI 4340 STEEL Aspects of the present disclosure relate to a method (100) of cryogenic broaching of AISI 4340 St utilization of the present method (100) in broaching operations leads to enhanced surface properties, no changes in composition and maintenance of colossal shear : the tool and the workpiece. The overall method (100) provides better tool life along with smoother edges and minimal deviations and tolerances achieved in the work present invention provides for a method (100) of cryogenic broaching which consists of various steps such as, but not limited to, releasing (106) of cryogenic cutting fl cryogenic cutting fluid storage container, supplying (108) the cryogenic cutting fluid to a nozzle and positioning (110) of the nozzle to the required cutting zone. This r can be extensively used in a turbine, gear machining, power transmission, landing gears in aircraft and similar industries. (FIG. 1 will be the reference figure)

### Complete Specification

#### Claims: I/We claim:

1. A method (100) of cryogenic broaching of AISI 4340 steel, wherein the said method (100) comprises of the steps of:
  - holding (102) of the AISI 4340 steel workpiece by a centre lathe;
  - placing (104) of a pull type broaching tool having distinctive cutting edges in a horizontal pull type broaching machine;
  - releasing (106) cryogenic cutting fluid through an outlet pipe from a cryogenic cutting fluid storage container by entry of compressed air through at least tv pipes into the cryogenic cutting fluid storage container;
  - supplying (108) of the cryogenic cutting fluid to the broaching interface through the nozzle;
  - positioning (110) the nozzle to point the cryogenic cutting fluid at the requisite cutting zone;
  - monitoring (112) of temperature of the broaching cycle using a thermocouple;
  - conducting (114) the broaching operation at a constant cutting speed.
2. The method (100) for cryogenic broaching of AISI 4340 steel as claimed in claim 1, wherein the cryogenic cutting fluid is stored in a completely sealed aluminum container with a steel closure cap.
3. The method (100) for cryogenic broaching of AISI 4340 steel as claimed in claim 1 wherein the flexible hose is made of moderate thermal conductivity braided t stainless steel.
4. The method (100) for cryogenic broaching of AISI 4340 steel as claimed in claim 1 wherein a flexible hose mechanically coupled to the nozzle is thermally insula

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