

# Invention produced in JOGMEC-TRC Lab

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### Cutting apparatus, Sample collecting system, and Method for sample collecting

#### Introduction

JOGMEC-TRC Lab conducts various types of analysis on core samples from mines and oil and gas fields for evaluate on mineral resources and hydrocarbon resources reserved under the ground. This invention is related to an apparatus to collect a cylindrical -shaped sample from the core when conducting such analysis on the core.



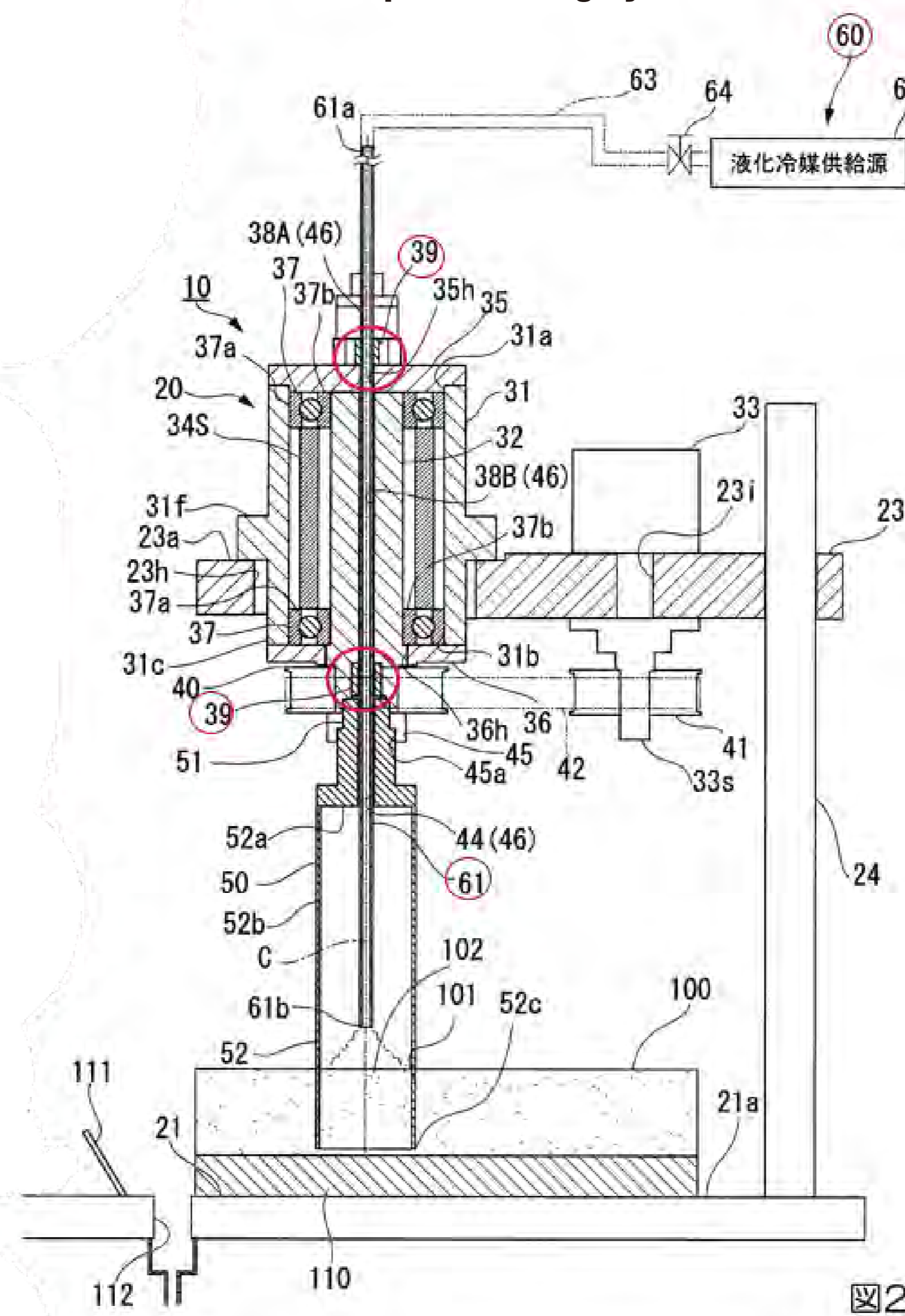
#### Technology Field of Application of Invention

This invention is applicable not only for analysis on samples for evaluation on mineral resources, oil and gas but also for those on artificial samples including concrete. This invention is particularly suitable for unconsolidated samples.

#### Problem to be solved

When cutting a material, water or lubricant oil is supplied in between a cutting bit and a cutting subject. However, in case where the subject is a unconsolidated such as a mudstone, the water or lubricant penetrates into the subject. This leads to a breakdown of the subject itself and changes internal condition of it. If a very low temperature coolant such as liquefied gas and liquefied nitrogen is used instead of the water or lubricant, the coolant freezes bearings which support a rotating shaft and damages them.

Overview of Sample collecting system



- (60) Liquefied coolant Supply Unit
- (61) Coolant supply tube (Hollow tubular body)
- (39) Tube guiding member

#### Patented Claim [Claim 1]

A cutting apparatus for collecting a cylindrical -shaped sample from a cutting subject comprising : a housing ; a rotating shaft which is rotatably supported by the housing ; a coring bit, of which base part is mounted in the rotating shaft, having a cylindrical bit part extending from the base part of it; a motor rotationally drives the rotating shaft; and a penetrating part which penetrates the rotating shaft and the base part of coring bit and extending from an upper part of the apparatus to an inside of the cylindrical bit part, wherein a hollow tubular body is enabled to be inserted into the penetration part, and a ring-shaped tube guiding member, which is made of a material having lower thermal conductivity than the rotating shaft, is mounted inner surface of the penetrating part.

#### Technical Features

- Installing a coolant supply tube (hollow tubular body) which penetrates the rotating shaft by mounting a motor on the side of rotating shaft
- Cooling and freezing the cutting subject at the inside of coring bit
- Preventing freezing of the rotating shaft and bearings by the tube guiding member made of a low thermal conductive material