

7/30/2024

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modular-fluid-handling-device-ii-US7726331B1-industrial-lego-device-by-infinity

Infinity Turbine
LLC

Modular Block Patented Fluid Handling
Microfluidics



This webpage QR code

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Company Name: Infinity Turbine LLC
 Product: Modular Block US Patent US7726331B1
 Working Fluid: Refrigerants, water, and CO2
 Purpose: Industrial Lego that bolts together to form modular fluidic channels for gas and liquids.
 Applications: Fast prototyping of any gas or liquid system.
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 Patent: Yes.
 Licensing: Yes.
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PDF Version of the webpage (first pages)

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Modular Block

The modular fluid handling device has a central bore with fluid passages that extend between block faces, both horizontally and vertically. The blocks can be stacked horizontally, vertically, or both. Rotating elements can be configured in any of the passages for the purpose of pumping, extraction, or power production.

Purpose: The functionality of the blocks is to perform rapid prototyping by deploying modular construction of systems using bolts.

Standard Blocks: 3 inch size with 10/32 inch fasteners. 1 inch center bore and 1/4 and 1/2 inch horizontal bores.

Larger Blocks: 6 inch size with 3/8 inch fasteners. 3 inch center bore and 1/4, 3/8, and 1/2 inch horizontal bores.

Patents (I and II) cover all sizes and most applications.

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Infinity Modular Block Experimenters Kit

Modular Block Turbine Experimenters Kit: For experimentation of cavitation and pumping designs. We include the basic kit for you to experiment with. This is a DIY kit, and support is additional. This is for experimenters only. This is for water based or compressed air based experimentation. Rotating elements can easily be 3-D printed, or laser cut from a variety of materials. The o-rings are not designed for pressure applications.

Experimenters Kit (Large)

Includes metal bearing blocks, center blocks, blank center block for modification, HDPE magnetic coupling blocks, blank HDPE blocks for modification, stainless steel shafts (short and long lengths), rotating assembly discs of various shapes which can be used for experimenting with pumping and cavitation, all fasteners, shaft clips, bearings, o-rings.

This is a standard atmospheric unit (non-pressurized) and not designed for pressure applications. 110V variable speed drive electric motor, magnetic couplings.

All attach points are 3/8 inch. This is a DIY kit. Support is additional. Kit is for experimenting with cavitation, pumping, or other experiments with water or air. It is not an extraction system for botanicals, but a water or air based experimentation system.

Applications:

Thermodynamic Cycles:

Vapor compression, Einstein cycle, Otto cycle, Diesel cycle, Brayton cycle, Rankine cycle, Organic Rankine cycle.

Fluid Handling: Fermentation, distillation, filtration, evaporator, condenser.

This invention relates generally to devices for processing and sampling of gases and liquids, and more specifically to devices allowing rapid construction of fluid reactors, distillers, extractors, homogenizers, filtration/separation devices, process models (e.g., devices for modeling engine cycles, refrigeration cycles, etc.), and other devices for handling fluids.

BACKGROUND OF THE INVENTION:

Fluid handling devices including fermenters, distillers, filtration tanks, evaporators, etc. (or combinations of these components) are exceedingly common in industry and in research labs.

Researchers and engineers also often need to experiment with models for common thermodynamic cycles, e.g., refrigeration cycles (vapor compression cycle, Einstein cycle, etc.) and power cycles (Otto cycle, Diesel cycle, Brayton cycle, Rankine cycle, etc.).

While it is often desirable to generate prototypes or small-scale versions of such devices, they are usually time-consuming, difficult, and expensive to construct. One approach commonly used in laboratories is to connect glassware vessels (e.g., flasks, towers, heat exchangers, etc.) with rubber tubing so that the vessels form some desired fluid process model.

Even apart from the significant time and expense required for their construction, these are quite fragile, are unsuitable for pressurized processes, and are also usually unsuitable for processes involving extreme temperatures or corrosive materials owing to the weakness of the tubing. In some cases, more durable fluid handling devices can be formed from metal vessels connected with (for example) brazed copper tubing, but these involve even greater time, cost, and fabrication burdens.
