



A DISHWASHER APPARATUS AND A METHOD OF OPERATING THE DISHWASHER APPARATUS THEREOF

IITM Technology Available for Licensing

Problem Statement

Technology

- In convention dishwasher, due to **various shapes of the vessels** to be washed, and proximity of the vessels to be washed, the **fluid jets generally get blocked** & may be **unable to reach soiled portions of the vessels**.
- Said vessels are still **not completely cleaned** after a **long wash cycle** & such wash cycles consume **plenty of water** & **in-turn electrical power** for operation.
- Further, the wetting & washing the vessels upon scrubbing necessitates use of **ample amount of cleaning fluids** & further **raises** the amount of **water required**. Hence there is a need to address above issues in efficiently.

- Present invention describes a **dishwashing apparatus**, comprises :
- a **base** structured to house a first motor;
- a **drum rotatably disposed** on a portion of the base & connected to the first motor, the drum being configured to receive & accommodate a plurality of vessels;
- a plurality of **brushes** rotatably disposed on an inner surface of the drum, the plurality of brushes is configured to selectively dispense a cleaning fluid & scrub the plurality of vessels for cleaning at least some vessels of the plurality of vessels;
- at least one **washing rack** removably connectable to a portion of the drum, the at least one washing rack configured to receive remaining vessels of the plurality of vessels;
- a **displacing & spinning mechanism** disposed in the drum & connectable to

Technology Category/ Market

Technology: Dishwasher Apparatus

Industry : Domestic & home appliances.

Applications: Domestic use, Guesthouses, Hotels, etc.

Market: The global **household cleaning products** market is projected to grow to **\$379.76 billion** in **2032** at a **CAGR** of **4.4%** during the forecast period (**2024-2032**)

Intellectual Property

IITM IDF Ref. 2504;

IN Patent No. 510800 (Granted)

TRL (Technology Readiness Level)

TRL-4, Proof of Concept ready, tested and validated in Laboratory

Research Lab/NSS Activities

Prof. Sivakumar K C;

Dept. of Mathematics;

Prof. Pijush Ghosh;

Dept. of Applied Mechanics & Biomedical Engg.

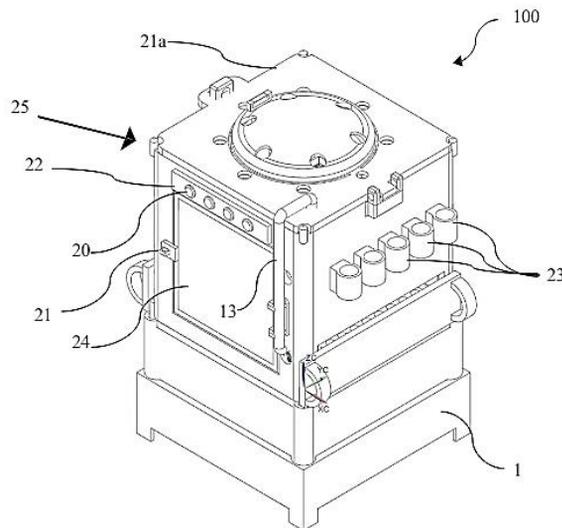


Figure 1

Fig.1 shown a perspective view of a dishwasher apparatus ;

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Technology (Contd.)

the at least one washing rack on one end & other end of the displacing & spinning mechanism being connectable to the drum, the displacing & spinning mechanism being configured to displace & rotate the at least one washing rack relative to the drum;

- an **indication unit** connectable to at least one of the base & a cover enclosing the drum, the indication unit configured to indicate at least one signal corresponding to cleaning of the plurality of vessels (4); and
- a **control unit** communicatively coupled to the first motor, the plurality of brushes, the displacing & spinning mechanism and the indication unit.
- Further claimed a method of operating the dishwasher apparatus.

Images

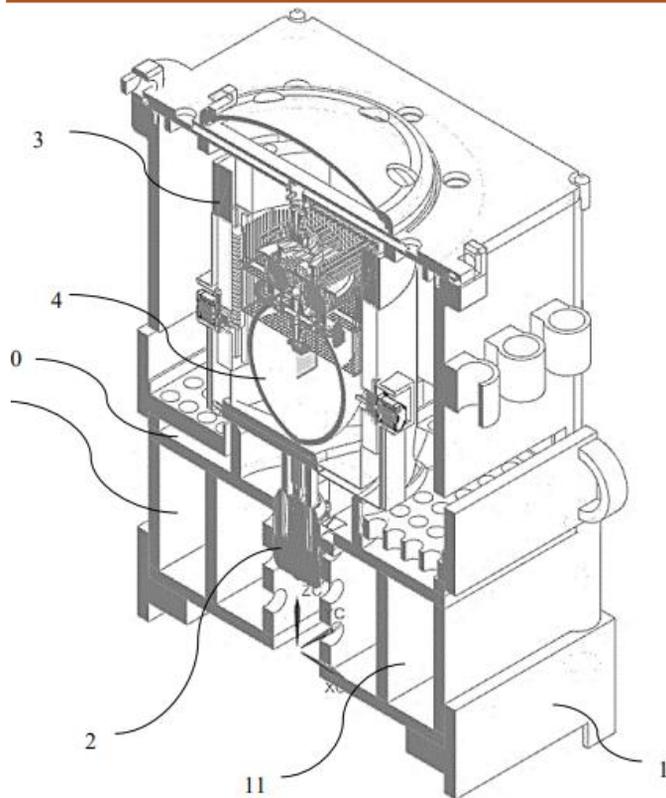


FIG.2(above): Illustrates sectional view of the dishwasher apparatus depicting a vessel in a drum of the dishwasher apparatus,

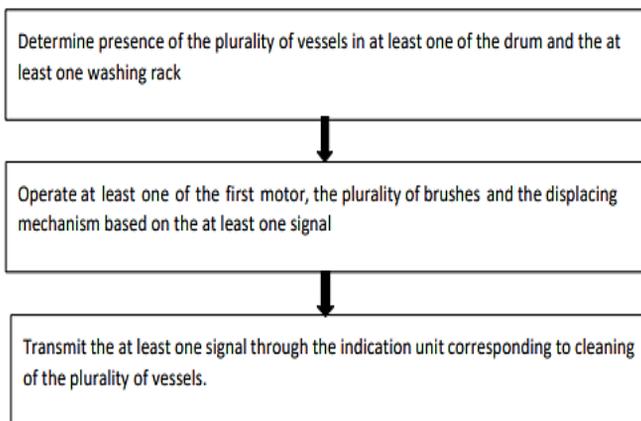


FIG.3 (above): Illustrates a flow diagram depicting a method of operating the dishwasher apparatus,

Key Features / Value Proposition

❖ Technical Perspective:

Different Components:

A) Sensors: optical level sensors, proximity sensors & continuous level sensors such as capacitive sensors, proximity sensors, non-contact level gauges, & miniature cameras,

B) Control Unit: detect presence of the plurality of vessels in at least one of the drum & the at least one washing rack upon receiving the at least one signal corresponding to cleaning of the plurality of vessels. Finally **regulates** the operation of the dishwasher apparatus.

Improved Performance:

- **Enhance the overall performance** by taking less time for a wash cycle & may reduce amount of cleaning fluids required for washing vessels by reusing the cleaning fluids.
- Therefore, said apparatus is **economical & efficient**.

Experimental Results:

The apparatus may wash the plurality of vessels in a cycle time of **10 to 15 minutes**.

❖ Industrial Perspective:

Utility:

- universally applicable in **Domestic & Home appliances**.

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