FORM 2

THE PATENT ACT 1970 (39 OF 1970)

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THE PATENT RULES, 2003 PROVISIONAL/COMPLETE SPECIFICATION

(SEE SECTION 10 AND RULE 13)

1. TITLE OF INVENTION: PORTABLE STEM-CELL BANK

2. APPLICANTS: (1) a) NAME: GUDURU VENKATA MARUTHI ABHIRAM

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(2) a) NAME: GOLLANGI HARSHITH

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(3) a) NAME: GUNTURI ASISH VARMA

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(4) a) NAME: JUNNURI LAKSHMI KARTHIK SURYANARAYANA MURTHY

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3. PREAMBLE TO DESCRIPTION:

COMPLETE SPECIFICATIONS: With tissues from the umbilical cord and blood cells from our own moms, this life-saving technology increases the likelihood of survival. This protects the current generation against several dangerous and high-risk illnesses, such as cancer, liver issues, and other illnesses. Liquid nitrogen is the primary source used by this gadget to maintain its low temperature. and entirely 3D manufactured for reasonably priced, airtight materials. The key benefit of adopting PEEK (Poly Ether Ether Ketone) material is that its lowest temperature is below -190 degrees. As a cryogenic material, it can sustain zero degrees so precisely for longer durations.

4.DESCRIPTION:(COMPLETE)

- Due to the increase in health problems, people are taking excessive amounts of pharmaceuticals, which has various detrimental effects. It has been shown that stem cells may be used to cure several serious illnesses, such as cancer.
- By making the stem cell preservation apparatus portable, we can reduce expenses and increase survival rates.
- Two boxes and two cylinders that can store two people's cord blood cells and tissues are included in the kit. Three-dimensional printing forms the foundation of the portable stem cell banking method.
- PEEK (Poly Ether Ether Ketone) material, which can tolerate temperatures as low as -197 degrees, is used to make the cylindrical chamber and cylinders. Because PLA or ABS is less costly and can resist temperatures as high as -2 degrees, it is used to make the box.
- These materials are called cryogenic materials because they can endure very low temperatures. This device uses liquid nitrogen, which is constantly pumped through the cylinder's holes, to maintain extremely low temperatures.
- Liquid nitrogen is also sprayed in the 5 mm (about 0.2 in) gap that is located beneath the cylinder. The stored liquid nitrogen is then pumped again, if necessary, using small motors.
- Due to heat sensors in the box, liquid nitrogen is automatically injected to maintain a low temperature when the temperature rises.
- Extra liquid nitrogen is stored in a clear space beneath the rectangular box and cylinder, and a trained technician may replace it every ten to fifteen

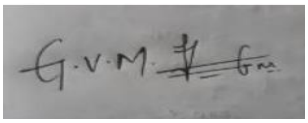
years. and the entire item is contained inside an airtight, 3-D printed container. and verify that the blood and cord tissue are stored in different cryogenic bottles and bags, respectively.

6. ABSTRACT:

People are taking too many medications because of the rise in health issues, which has several negative repercussions. It has been discovered that stem cells may be utilized to treat several dangerous disorders, including cancer. Modern problems require modern answers. However, the procedure of keeping them in blood banks is expensive and beyond the means of the average person. We can save costs and raise survival rates by making the stem cell preservation equipment portable. The package includes two cylinders and two boxes that can hold two people's cord tissues and cord blood cells. The entire structure of the portable stem cell banking system is based on 3-D printing. The cylindrical chamber and cylinders are made of PEEK (Poly Ether Ether Ketone) material, which can withstand temperatures as low as -197 degrees. The box is made of PLA or ABS material, which is less expensive and can withstand temperatures as high as -2 degrees. Because of their ability to withstand extremely low temperatures, these materials are known as cryogenic materials. Liquid nitrogen, which continuously circulates through the cylinder's perforations, is used by this apparatus to sustain such low temperatures. Additionally, there is a 5 mm space beneath the cylinder, and liquid nitrogen is even applied there. Then, if needed, tiny motors continue to pump the liquid nitrogen that has been stored. The box has heat sensors, and as the temperature rises, liquid nitrogen is automatically injected to keep the temperature low. Extra liquid nitrogen is kept in a free area under the cylinder and rectangular box, and it may be changed every ten to fifteen years by a qualified technician. and the package is entirely enclosed inside a 3-D printed, airtight container. and confirm that the cord tissue and blood are kept in separate cryogenic bags and bottles, respectively.

Keywords: PEEK, PLA, ABS, Cord blood, Cord tissue, Cryogenic materials, Liquid nitrogen.

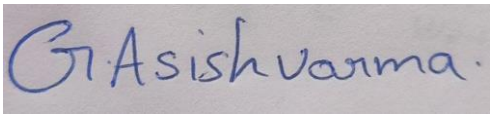
7.DATE AND SIGNATURE: 16/12/2023

SIGNATURE: 

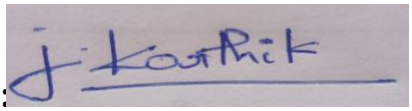
NAME: GUDURU VENKATA MARUTHI ABHIRAM

SIGNATURE: 

NAME: GOLLANGI HARSHITH

SIGNATURE: 

NAME: GUNTURI ASISH VARMA

SIGNATURE: 

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