FORM 2

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COMPLETE SPECIFICATION
(See Section 10; rule 13)

ADJUSTABLE DENTAL CAVITY FILLING DEVICE

APPLICANT(S)
NAME: Guru Nanak Institute of Dental Sciences and Research
NATIONALITY: Indian
ADDRESS: 157/F, Nilgunj Road, Sahid Colony, Panihati, Kolkata, West Bengal 700114, India.

The following specification particularly describes the invention and the manner in which it is to be performed:

FIELD OF THE INVENTION

[0001] The present invention relates to an oral health product. More particularly, the present invention is directed towards an adjustable dental cavity filling device that assists a medical practitioner in filling of dental cavity of a patient as per the detected cavity.

BACKGROUND OF THE INVENTION

[0002] Dental cavities, or caries, are caused by the accumulation of plaque on teeth, which produces acids from sugars and starches. These acids erode the tooth enamel, leading to decay. Poor oral hygiene, frequent snacking, and consuming sugary foods and drinks are primary contributors. Cavities can cause significant drawbacks and sufferings, including tooth pain, sensitivity, and difficulty eating. If untreated, they can lead to infections, abscesses, and even tooth loss. The resulting discomfort and potential for more severe dental issues highlight the importance of preventive care, timely diagnosis, and treatment to maintain oral health and overall well-being.

[0003] Traditional methods of treating dental cavities include drilling to remove decayed tissue, followed by filling the cavity with materials like amalgam, composite resin, or gold. While effective, these methods have drawbacks. The drilling process can be painful and anxiety-inducing for patients. Amalgam fillings contain mercury, raising health and environmental concerns. Composite fillings, although aesthetically pleasing, may not be as durable as amalgam. Additionally, traditional methods often require multiple visits and can be costly. These drawbacks underscore the need for advancements in less invasive, more patient-friendly, and durable treatments to enhance dental care outcomes.

[0004] **CN109620447B** discloses a portable tooth washing device. The function of supplementing the tooth washing liquid from the connecting seat connected

with the tooth washing device is realized through the pump in the tooth washing device, so that a tooth washing liquid source is not required to be connected through a connecting hose during tooth washing, and liquid leakage cannot occur during liquid filling. Further, the automatic filling of the tooth cleaner is realized by automatically detecting the seating and unseating conditions and automatically detecting whether the liquid reservoir is full or not and controlling the opening and closing and switching of a series of valves through the controller. ***Although CN'447 relates to the field of personal hygiene care appliances, in particular to a portable tooth washing device, however this cited prior art is incapable of assisting a medical practitioner in filling of dental cavity in teeth of a patient as per the detected cavity, hindering restoring tooth structure, permitting decay progression, aggravating pain, and abandoning oral health by providing durable and effective cavity treatments.***

[0005] **CN107661153B** relates to a toothbrush with water flossing features comprising: a handle defining a first fluid conduit therein; a brush tip extending from the first end of the handle and defining a second fluid conduit therein, the second fluid conduit connected to the first fluid conduit; a brush head supported on the distal end of the brush tip, wherein the brush head includes a fluid outlet in fluid communication with a fluid conduit within the brush shaft; a base plate removably connected to the second end of the handle and including a fluid inlet port configured to connect with an external fluid source and in fluid communication with the first fluid passageway; and a first valve positioned between the fluid inlet port and the first fluid conduit and configured to close when the base plate is removed from the toothbrush and configured to open when the base plate is connected to the toothbrush. ***Though CN'153 relates to oral health products relating to sonic toothbrushes having a water flossing feature, however this cited prior art lacks in assisting a medical practitioner in filling of dental cavity in teeth of a patient as per the detected cavity, hindering restoring tooth structure, permitting decay progression, aggravating pain, and abandoning oral health by providing durable and effective cavity treatments.***

[0006] Conventionally, many devices have been developed that relates to the field of personal hygiene care appliances, in particular to a portable tooth washing device, however these devices are incapable of assisting a medical practitioner in filling of dental cavity in teeth of a patient as per detected cavity, hindering restoring tooth structure, permitting decay progression, aggravating pain, and abandoning oral health by providing durable and effective cavity treatments.

[0007] In order to overcome the aforementioned drawbacks, there exists a need in the art to develop a device that needs to assist a medical practitioner in filling of dental cavity inside oral cavity of a patient as per the detected cavity, thereby efficiently restoring tooth structure, preventing decay progression, alleviating pain, and maintaining oral health by providing durable and effective cavity treatments.

OBJECTS OF THE INVENTION

[0008] The principal object of the present invention is to overcome the disadvantages of the prior art.

[0009] An object of the present invention is to develop a device that assists a medical practitioner in filling of dental cavity of a patient as per detected cavity, thereby efficiently restoring tooth structure, preventing decay progression, alleviating pain, and maintaining oral health by providing durable and effective cavity treatments.

[0010] Another object of the present invention is to develop a device that is capable of determining depth of the cavity and accordingly fills the filler material in the cavity, thereby ensuring complete restoration, preventing overfilling or under filling, enhancing treatment accuracy, and promoting long-term dental health by providing a precise and effective solution.

[0011] Another object of the present invention is to develop a device that is directed towards application of an adequate pressure over the dispensed filler material in the cavity in view of efficient settling and filling of the cavity, ensuring effective settling, eliminating air pockets, and achieving a secured, durable filling, promoting long-term stability and oral health.

[0012] Yet another object of the present invention is to develop a device that is capable of self-sterilizing when not in use, ensuring hygiene, preventing cross-contamination, and maintaining safe, effective oral care for each individual.

[0013] The foregoing and other objects, features, and advantages of the present invention will become readily apparent upon further review of the following detailed description of the preferred embodiment as illustrated in the accompanying drawings.

SUMMARY OF THE INVENTION

[0014] Aspects of the invention, in some embodiments thereof, relates to an adjustable dental cavity filling device for maintaining dental hygiene. More specifically, the invention relates to an oral health product that is used for filling of dental cavity inside the oral cavity of a patient.

[0015] According to an embodiment of the present invention, an adjustable dental cavity filling device, comprises of an elongated body having a handle on the proximal end is accessed by a medical practitioner for acquiring a grip on the body and inserting a U-shaped tray arranged at the distal end in a patient’s mouth, an artificial intelligence-based imaging unit installed with tray determine dimensions of the patient’s dental jaws, a drawer arrangement integrated in the tray for appropriate accommodation of the tray inside the patient’s mouth, an optical sensor integrated on the tray monitors presence of cavity on the patient's

teeth, an ultrasonic sensor integrated on the tray determines depth of the cavity, a motorized sliding unit integrated underneath the tray translates a cap installed on the sliding unit via a telescopically operated link over the monitored cavity, an electronically controlled valve integrated in the cap that dispense a filler material stored in a container configured with the tray over the cavity, and a vibrating unit integrated with the cap produce vibrating sensations for applying a pressure on the dispensed material to get inserted properly inside the cavity, the microcontroller then synchronously actuates the link to get extended for positioning the cap in contact with surface of the tooth in view of applying an adequate amount of the pressure on surface of tooth for the material to get filled in the cavity.

[0016] According to another embodiment of the present invention, the proposed device further comprises of a pressure sensor integrated underneath the cap for monitoring pressure applied by the cap over surface of the tooth, a LED (light emitting diode) is integrated on the tray for providing adequate light to allow the imaging unit to perform precise operation, a fingerprint sensor installed on the handle for authentication purpose, a UV (ultraviolet) light installed on the body get illuminated for sterilizing the body, when not in use, and a Peltier unit integrated in the container for maintaining a required temperature inside the container in view of preventing in change in consistency of the stored material.

[0017] While the invention has been described and shown with particular reference to the preferred embodiment, it will be apparent that variations might be possible that would fall within the scope of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

Figure 1 illustrates a perspective view of an adjustable dental cavity filling

device.

DETAILED DESCRIPTION OF THE INVENTION

[0019] The following description includes the preferred best mode of one embodiment of the present invention. It will be clear from this description of the invention that the invention is not limited to these illustrated embodiments but that the invention also includes a variety of modifications and embodiments thereto. Therefore, the present description should be seen as illustrative and not limiting. While the invention is susceptible to various modifications and alternative constructions, it should be understood, that there is no intention to limit the invention to the specific form disclosed, but, on the contrary, the invention is to cover all modifications, alternative constructions, and equivalents falling within the spirit and scope of the invention as defined in the claims.

[0020] In any embodiment described herein, the open-ended terms "comprising," "comprises," and the like (which are synonymous with "including," "having" and "characterized by") may be replaced by the respective partially closed phrases "consisting essentially of," consists essentially of," and the like or the respective closed phrases "consisting of," "consists of, the like.

[0021] As used herein, the singular forms "a," "an," and "the" designate both the singular and the plural, unless expressly stated to designate the singular only.

[0022] The present invention relates to oral health product. More particularly to an adjustable dental cavity filling device that aims at assisting a medical practitioner in filling of dental cavity in teeth of a patient as per the detected cavity, thereby efficiently restoring tooth structure, preventing decay progression, alleviating pain, and maintaining oral health by providing durable and effective cavity treatments. Additionally, the proposed device is also capable of determining depth of said cavity and accordingly fills the filler material in the

cavity along with applying an adequate pressure over the dispensed filler material in the cavity in view of efficient settling and filling of the cavity, ensuring complete restoration, preventing overfilling or under filling, enhancing treatment accuracy, and promoting long-term dental health by providing a precise and effective solution.

[0023] Referring to Figure 1, a perspective view of an adjustable dental cavity filling device is illustrated, comprising an elongated body **101** having a proximal and distal end, a handle **102** integrated with the proximal end, a U-shaped tray **103** arranged at the distal end, an artificial intelligence-based imaging unit **104** installed with the tray **103**, a drawer arrangement **105** integrated in the tray **103**, a motorized sliding unit **106** integrated underneath the tray **103**, a telescopically operated link **108** installed on the sliding unit **106** having a cap **107**, an electronically controlled valve **114** integrated in the cap **107** and connected to a container **109** configured with the tray **103**, a vibrating unit **110** integrated with the cap **107**, a LED (light emitting diode) **111** integrated on the tray **103**, a fingerprint sensor **112** installed on the handle **102** and a UV (ultraviolet) light **113** installed on the body **101**.

[0024] The device proposed herein includes an elongated body **101** that is developed to be positioned inside mouth of a patient whose tooth cavities are to be filled. The elongated body **101** as mentioned herein serves as a structural support to various components associated with the device, wherein the body **101** is made up of material that includes but not limited to stainless steel, which in turn ensures that the device is of generous size and is light in weight.

[0025] The body **101** is arranged with a handle **102** that is accessed by a medical practitioner for acquiring a grip on the body **101** and positioning a U-shaped tray **103** arranged at the distal end of the body **101** inside mouth of the patient.

[0026] In order to activate functioning of the device, the medical practitioner is

required to manually switch on the device by pressing a button positioned on the body **101**, wherein the button used herein is a push button. Upon pressing of the button, the circuits get closed allowing conduction of electricity that leads to activation of the device and vice versa.

[0027] Upon activation of the device by the medical practitioner, an inbuilt microcontroller embedded within the body **101** and linked to the switch generates a command to activate an artificial intelligence-based imaging unit **104** provided on the tray **103** to determine dimensions of dental jaws of the patient. The imaging unit **104** comprises of an image capturing arrangement including a set of lenses that captures multiple images in surrounding of the body **101**, and the captured images are stored within memory of the imaging unit **104** in form of an optical data. The imaging unit **104** also comprises of a processor that is integrated with artificial intelligence protocols, such that the processor processes the optical data and extracts the required data from the captured images. The extracted data is further converted into digital pulses and bits and are further transmitted to the microcontroller. The microcontroller processes the received data and determines dimensions of dental jaws of the patient.

[0028] In accordance to the determined dimensions of the patient's jaws, a drawer arrangement **105** integrated in the tray **103** is actuated by the microcontroller to extend/retract the tray **103** in view of proper accommodation of the tray **103** inside mouth of the patient. The drawer arrangement **105** consists of multiple plates that are overlapped to each other with a sliding unit **106**, wherein upon actuation of the drawer arrangement **105** by the microcontroller, the motor in the sliding unit **106** starts rotating a wheel coupled via a shaft in clockwise/anticlockwise direction providing a movement to the slider in the drawer arrangement **105** to extend extend/retract the tray **103** in view of proper accommodation of the tray **103** inside mouth of the patient.

[0029] An optical sensor integrated on the tray **103** monitors presence of cavity

on the patient's teeth in synced with the imaging unit **104**. The optical sensor operates by emitting light onto the teeth surface and analyzing the reflected light. When the light encounters a cavity, the reflection pattern changes due to differences in teeth structure and density. The sensor detects these variations and sends data to the microcontroller for analysis. The microcontroller processes this data for monitoring the presence of cavity on teeth of the patient.

[0030] A LED (light emitting diode) **111** integrated on the tray **103** is activated by the microcontroller to get illuminated for providing adequate light inside mouth of the patient in order to allow the imaging unit **104** to perform precise operation. The LED **111** is a two-lead semiconductor light source also known as p-n junction which produce the lighting when constant voltage is supplied across the diode. When the voltage is supplied across the diode, the electrons recombine with the electrons hole in the diode which result in conversion of electron into photons which is another form of light, thus providing adequate light inside mouth of the patient in order to allow the imaging unit **104** to perform precise operation.

[0031] The tray **103** is integrated with an ultrasonic sensor that determines the depth of the cavity in sync with the imaging unit **104**. The ultrasonic sensor works by emitting ultrasonic waves and then measuring the time taken by these waves to bounce back after hitting the surface of the tooth. The ultrasonic sensor includes two main parts viz. transmitter, and a receiver for detecting depth of the cavity**.** The transmitter sends a short ultrasonic pulse towards the surface of tooth which propagates through the air at the speed of sound and reflects back as an echo to the transmitter as the pulse hits the tooth. The transmitter then detects the reflected eco from the tooth’s surface and calculations is performed by the sensor based on the time interval between the sending signal and receiving echo to determine depth of the cavity. The determined data is sent to the microcontroller in a signal form, based on which the microcontroller further process the signal to determine depth of the cavity.

[0032] In accordance to the monitored presence of cavity on the patient's tooth, a motorized sliding unit **106** integrated underneath the tray **103** is actuated by the microcontroller in sync with the imaging unit **104** for translating a cap **107** installed on the sliding unit **106** via a telescopically operated link **108** over the monitored cavity in the patient's tooth. The motorized sliding unit **106** includes sliding rack and rail, such that the telescopically operated link **108** is mounted over the rack that are electronically operated by the microcontroller for moving over the rail. The microcontroller activates the sliding unit **106** for performing the sliding operation. The sliding unit **106** is powered by a DC (direct current) motor that is activated by the microcontroller by providing required electric current to the motor. The motor comprises of a coil that converts the received electric current into mechanical force by generating magnetic field, thus the mechanical force provides the required power to the rack to provide sliding movement to the telescopically operated link **108** in order to translate the cap **107** over the monitored cavity in the patient's tooth.

[0033] Upon positioning of the cap **107** over the monitored cavity, an electronically controlled valve **114** integrated in the cap **107** is actuated by the microcontroller to dispense a filler material stored in a container **109** configured with the tray **103** over the cavity. The electronically controlled valve **114** consists of a solenoid that gets open or closed for dispensing of water over the user's foot as directed by the microcontroller. Upon actuation of the electronic valve **114** by the microcontroller, the valve **114** opens an internal solenoid, allowing water flow through the valve **114** and out of the dispensing nozzle. The flow rate and duration of water dispensing is regulated by the microcontroller by regulating actuation of the valve **114** to dispense filler material over the cavity.

[0034] Post dispensing of filler material over the cavity, a vibrating unit **110** integrated with the cap **107** that is actuated by the microcontroller to produce vibrating sensations in the filler material for settling the dispensed material in the tooth cavity, effectively. The vibrating unit **110** is used for subjecting the filler

material to move back and forth or from side to side very quickly leading to controlled and reproducible mechanical vibration. The vibration unit consists of an electric motor (preferably a direct current motor) and an eccentric weight attached to the shaft of the motor. Upon activation of the vibrating unit **110** by the microcontroller, the motor provides the required power to rotate the shaft, resulting in a rotational motion to the eccentric weight, thus causing a vibration to the filler material for effective settling the dispensed material in the tooth cavity.

[0035] The microcontroller synchronously directs actuation of the link **108** to get extended for positioning the cap **107** in contact with surface of the tooth in view of applying an adequate amount of the pressure on surface of tooth for the material to get filled in the cavity, efficiently.

[0036] The telescopically operated link **108** is linked to a pneumatic unit, including an air compressor, air cylinders, air valves and piston which works in collaboration to aid in extension and retraction of the link **108**. The pneumatic unit is operated by the microcontroller, such that the microcontroller actuates valve to allow passage of compressed air from the compressor within the cylinder, the compressed air further develops pressure against the piston and results in pushing and extending the piston. The piston is connected with the link **108** and due to applied pressure, the link **108** extends and similarly, the microcontroller retracts the telescopically operated link **108** by closing the valve resulting in retraction of the piston. Thus, the microcontroller regulates the extension/retraction of the link **108** in order to apply an adequate amount of the pressure on surface of tooth for the material to get filled in the cavity, efficiently.

[0037] A pressure sensor integrated underneath the cap **107** monitors the pressure applied by the cap **107** over surface of the tooth. The pressure sensor comprises of a sensing element known as diaphragm that experiences a force exerted by the cap **107** over surface of the tooth. This force leads to deflection in the diaphragm that is measured by the sensor and converted into an electrical signal which is sent to

the microcontroller for monitoring the pressure applied by the cap **107** over surface of the tooth.

[0038] The container **109** is integrated with a Peltier unit that is actuated by the microcontroller for maintaining a required temperature inside the container **109** in view of preventing in change in consistency of the stored material. The Peltier unit consists of two semiconductor plates, known as Peltier plates, connected in series and sandwiched between two ceramic plates. When an electric current is applied to the Peltier unit, one side of the unit absorbs heat from its surroundings, while the other side releases heat, thereby maintaining a required temperature inside the container **109** in view of preventing in change in consistency of the stored material.

[0039] Lastly, a battery is installed within the device which is connected to the microcontroller that supplies current to all the electrically powered components that needs an amount of electric power to perform their functions and operation in an efficient manner. The battery utilized here, is preferably a dry battery which is made up of Lithium-ion material that gives the device a long-lasting as well as an efficient DC (Direct Current) current which helps every component to function properly in an efficient manner. As the device is battery operated and do not need any electrical voltage for functioning. Hence the presence of battery leads to the portability of the device i.e., user is able to place as well as moves the device from one place to another as per the requirements.

[0040] When the device is not use, as detected by the microcontroller via the imaging unit **104**, the microcontroller activates a UV (ultraviolet) light **113** installed on the body **101** to get illuminated for sterilizing the body **101**. The UV (ultraviolet) light sterilizes by emitting UV-C rays, which penetrate the cell walls of microorganisms, including bacteria, viruses, and fungi. The UV-C light damages their DNA and RNA, rendering them unable to reproduce and causing them to die. When the UV light **113** illuminates the surface of the body **101**, it

effectively kills or inactivates these harmful pathogens. This process provides a chemical-free, efficient method for sterilization, ensuring surfaces are hygienic and reducing the risk of infections.

[0041] A fingerprint sensor **112** installed on the handle **102** is accessed by the practitioner for authentication purpose. The fingerprint sensor **112** works on the principle of processing which includes two elements like enrolment and matching. In enrolment, the practitioner has to put the finger on the sensor, so that the sensor checks the fingerprints to process and generate the finger pattern and it will be stored. In matching, once the practitioner places the finger then the sensor will generate a pattern of the finger and sends the acquired data to the microcontroller. The microcontroller then compares the data with a stored pre-fed data to authenticate the practitioner. Thus, the fingerprint sensor **112** authenticate and recognize the fingerprints of the practitioner and accordingly activates the device for assisting the practitioner in filling dental cavity of the patient.

[0042] The present invention works best in the following manner, where the elongated body **101** as mentioned in the invention is developed to be positioned inside mouth of a patient whose tooth cavities are to be filled. The handle **102** is accessed by a medical practitioner for acquiring a grip on the body **101** and positioning a U-shaped tray **103** inside mouth of the patient. Upon activation of the device by the medical practitioner, the microcontroller generates a command to activate an artificial intelligence-based imaging unit **104** to determine dimensions of dental jaws of the patient. In accordance to the determined dimensions of the patient's jaws, a drawer arrangement **105** is actuated by the microcontroller to extend/retract the tray **103** in view of proper accommodation of the tray **103** inside mouth of the patient. An optical sensor monitor's presence of cavity on the patient's teeth in synced with the imaging unit **104**. A LED (light emitting diode) **111** is activated by the microcontroller to get illuminated for providing adequate light inside mouth of the patient in order to allow the imaging unit **104** to perform precise operation.

[0043] In continuation, the ultrasonic sensor determines the depth of the cavity in sync with the imaging unit **104**. In accordance to the monitored presence of cavity on the patient's tooth, a motorized sliding unit **106** is actuated by the microcontroller in sync with the imaging unit **104** for translating a cap **107** over the monitored cavity in the patient's tooth. Upon positioning of the cap **107** over the monitored cavity, an electronically controlled valve **114** is actuated by the microcontroller to dispense a filler material stored in a container **109** configured with the tray **103** over the cavity. Post dispensing of filler material over the cavity, a vibrating unit **110** is actuated by the microcontroller to produce vibrating sensations in the filler material for settling the dispensed material in the tooth cavity, effectively. A pressure sensor monitors the pressure applied by the cap **107** over surface of the tooth. The Peltier unit is actuated by the microcontroller for maintaining a required temperature inside the container **109** in view of preventing in change in consistency of the stored material.

[0044] Although the field of the invention has been described herein with limited reference to specific embodiments, this description is not meant to be construed in a limiting sense. Various modifications of the disclosed embodiments, as well as alternate embodiments of the invention, will become apparent to persons skilled in the art upon reference to the description of the invention.

We Claim:

1) An adjustable dental cavity filling device, comprising:

i) an elongated body **101** having a proximal and distal end, wherein said proximal end is integrated with a handle **102** that is accessed by a medical practitioner for acquiring a grip on said body **101**;

ii) a U-shaped tray **103** arranged at said distal end that is inserted by said practitioner in a patient's mouth, wherein said tray **103** is installed with an artificial intelligence-based imaging unit **104** integrated with a processor and provided on said tray **103** for capturing and processing multiple images in vicinity of said tray **103**, respectively to determine dimensions of said patient's dental jaws;

iii) a drawer arrangement **105** integrated in said tray **103** that is actuated by an inbuilt microcontroller to extend/retract said tray **103** for properly accommodating said tray **103** inside said patient's mouth, wherein an optical sensor is integrated on said tray **103** and synced with said imaging unit **104** for monitoring presence of cavity on said patient's teeth;

iv) an ultrasonic sensor integrated on said tray **103** and synced with said imaging unit **104** for determining depth of said cavity, wherein a motorized sliding unit **106** is integrated underneath said tray **103** that is actuated by said microcontroller in sync with said imaging unit **104** for translating a telescopically operated link **108** installed on said sliding unit **106** over said monitored cavity;

v) a cap **107** integrated with said link **108** that is positioned over said patient's tooth detected with said cavity, wherein an electronically controlled valve **114** is integrated in said cap **107** that is actuated by said microcontroller to dispense a filler material stored in a container **109** configured with said tray **103** over said cavity; and

vi) a vibrating unit **110** integrated with said cap **107** that is actuated by said microcontroller to produce vibrating sensations for applying a pressure on said dispensed material to get inserted properly inside said cavity, wherein

said microcontroller synchronously actuates said link **108** to get extended for positioning said cap **107** in contact with surface of said tooth in view of applying an adequate amount of said pressure on surface of tooth for said material to get filled in said cavity.

2) Said device as claimed in claim 1, wherein a pressure sensor is integrated underneath said cap **107** for monitoring pressure applied by said cap **107** over surface of said tooth, in accordance to which said microcontroller directs extension of said link **108**.

3) Said device as claimed in claim 1, wherein a LED (light emitting diode) **111** is integrated on said tray **103** that is activated by said microcontroller for providing adequate light to allow said imaging unit **104** to perform precise operation.

4) Said device as claimed in claim 1, wherein a fingerprint sensor **112** is installed on said handle **102** that is accessed by said practitioner for authentication purpose, in accordance to which said microcontroller activates said device.

5) Said device as claimed in claim 1, wherein a UV (ultraviolet) light **113** is installed on said body **101** that is actuated by said microcontroller to get illuminated for sterilizing said body **101**, when not in use.

6) Said device as claimed in claim 1, wherein a Peltier unit is integrated in said container **109** that is actuated by said microcontroller for maintaining a required temperature inside said container **109** in view of preventing in change in consistency of said stored material.

K. Setiya

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Kunal Setiya
INPA-2570
Agent for the Applicant(s)

ABSTRACT

ADJUSTABLE DENTAL CAVITY FILLING DEVICE

An adjustable dental cavity filling device, comprising an elongated body **101** with a U-shaped tray **103** developed to be inserted in a patient's mouth, an artificial intelligence-based imaging unit **104** determine dimensions of patient's dental jaws, a drawer arrangement **105** modulates dimensions of tray **103** inside patient's mouth, an optical sensor monitors presence of cavity on patient's teeth, an ultrasonic sensor determines depth of cavity, a motorized sliding unit **106** translates a cap **107** over monitored cavity, an electronically controlled valve **114** dispense a filler material over cavity, and a vibrating unit **110** produce vibrating sensations for applying a pressure on dispensed material to get inserted properly inside cavity.

Ref. Figure 1