Pertexa Healthcare Technologies, Inc. –

RITA (Remote Intelligent Telehealth Assistant)

SPECIFICATIONS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is in the technical field of mobile equipment. More particularly, the present invention is for applications of telemedicine.

2. Background Information

Mobile carts, semi-autonomous and fully autonomous telemedicine devices are being used for a variety of healthcare applications such as emergency rooms, intensive care units and rural clinics. In a typical telemedicine visit, the physician is remote and a medical assistant brings the telemedicine device into the room with the patient.

Once in the room with the patient, very fine movements are required of the telemedicine device to precisely position it with respect to the patient. Unpowered telemedicine carts easily accomplish this by using a number of swivel castors on their bases.

In the case of a large hospital or other large facility, the telemedicine device may have been wheeled a relatively long distance to arrive at the patient. In addition, ramps may need to be traversed. In these cases, a power assisted drive base will enable users to quickly and efficiently move the telemedicine device.

The mobile drive base disclosed here uses multiple swivel castors to accomplish the precise maneuvering when in the room with the patient and also has a retractable powered drive wheel to assist in moving the telemedicine device over long distances or up ramps. The powered wheel is controlled from a throttle apparatus and automatically drops down upon application of the throttle. The powered wheel automatically retracts a few seconds after release of the throttle. The drive wheel can also be lowered to serve as a parking brake, once the telemedicine device is positioned.

The device can also be expanded and be used in clinics, micro-hospitals, nursing homes, surgery centers, specialists, schools, hotels, employers offices (health rooms) and other such locations

6. Previous Solutions: Describe what prior solutions to this problem existed and why they are inadequate.

Prior solutions had either fine movement or long-distance capability but not both. Current invention has both capabilities.

A bank of USB ports for multiple peripheral health care or other devices.

7. Summary of the Invention: Describe in clear and simple terms how you intend to solve the problem. Attach block or schematic diagrams, timing diagrams, flow charts, or any other graphics that will make the Invention easier to understand. Pay particular attention to what is unique about the Invention.

The present invention is a mobile robot drive unit for telemedicine applications that utilizes swivel castors for precise manual maneuvering plus a drop-down power-assisted wheel that deploys when needed, to traverse long distances or ramps. A throttle apparatus controls the speed of the device. The power-assisted wheel deploys automatically when the throttle is applied. The power-assisted wheel can also be used as a parking brake.

A possible blue tooth ‘Follow-me’ concept is being considered

A GPS mapping of the facility is being considered (schools, hotels, resorts, mobile security)

A future voice capability, AI, RITA Character

Look and Feel

Clean clear fiber glass,

Wipe away, able to withstand sprays, household sterile chemicals

Ability to stick and peel logo's

PTZ Camera

Pan Tilt Zoom camera

High Definition

Remote controlled by user on other end

Protected by clear doom (can wipe away stains, blood splatter e.g in in an ER room)

Quality Microphone

Should be able to pick up patients from background and ambient noise. Need to consider room and ambient noise.

Quality Speakers

An important part of bi-lateral communication without lag is important in Telehealth visits. A speaker able to

Controls

A possible remote control of RITA via Wi-FI / cellular/5G

Manual motorbike throttle type at back

Emergency stop

Multi-terrain

Ability to traverse on gravel, grass, pavements through its mechanical motor

Battery source

Rechargeable inhouse battery, 8 hour single operation would be ideal

Retractable cable or rechargeable housing unit

Batter level indicator for user

Multiple Screens

All touch screens

Main screen to mechanically move up/down

Two arm screens, adjustable into multi swivel locations and fold away as arms

Keyboard mouse

foldaway tray for keyboard and mouse control for the multiple monitors

Transportation

Suggest 2 parts, capable of a single nut/bolt with a connector harness to connect lower and upper frame

Should be transportable in a family car as two parts

Easily assembled by the end user

8. Advantages: What advantages does the Invention have over previous solutions? How does the Invention create value, whether to an end user, an OEM, or directly to [Company Name]?

The invention enables more effective positioning of a telemedicine device.

Shape, characteristics for children and psychological comfort in talking to remote professionals.

SUMMARY OF THE BASE (Coasters and drop wheel for motor)

The present invention is a mobile robot drive unit for telemedicine applications that utilizes swivel castors for precise manual maneuvering plus a drop-down power-assisted wheel that deploys when needed, to traverse long distances or ramps. A throttle apparatus controls the speed of the device. The power-assisted wheel deploys automatically when the throttle is applied. The power-assisted wheel can also be used as a parking brake.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of the mobile robot drive base of the present invention;

Fig. 2 is a top view of the mobile robot drive base of Fig. 1;

Fig. 3 is a side view of the mobile robot drive base of Fig. 1; and

Fig. 4 is an illustration of the throttle apparatus and its interface to the mobile robot drive base of Fig. 1.

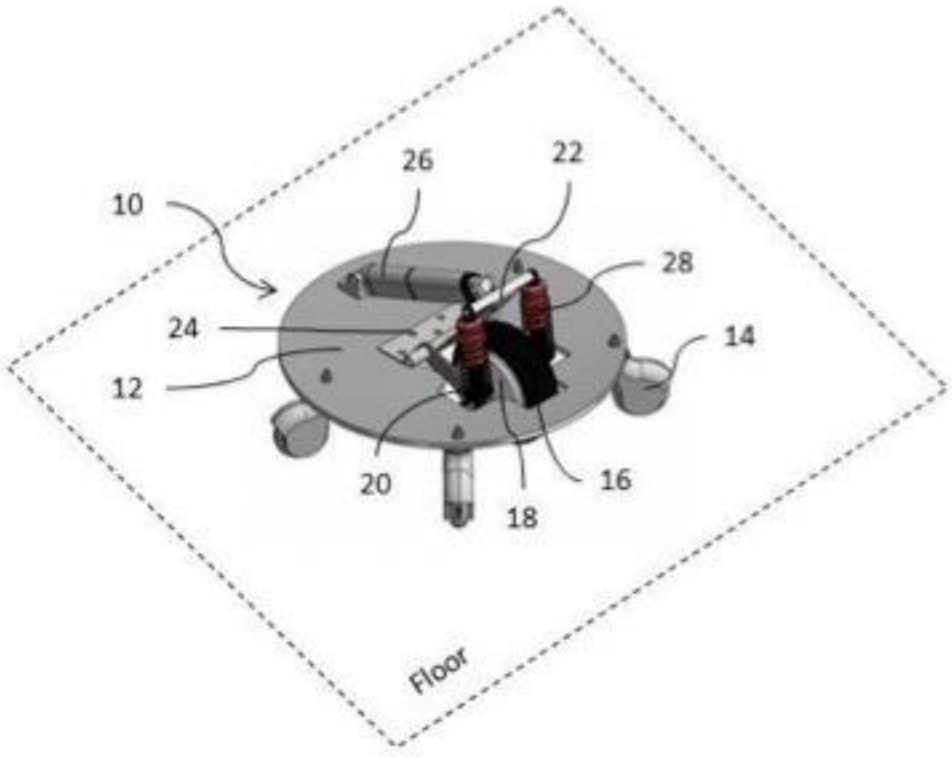

FIG. 1

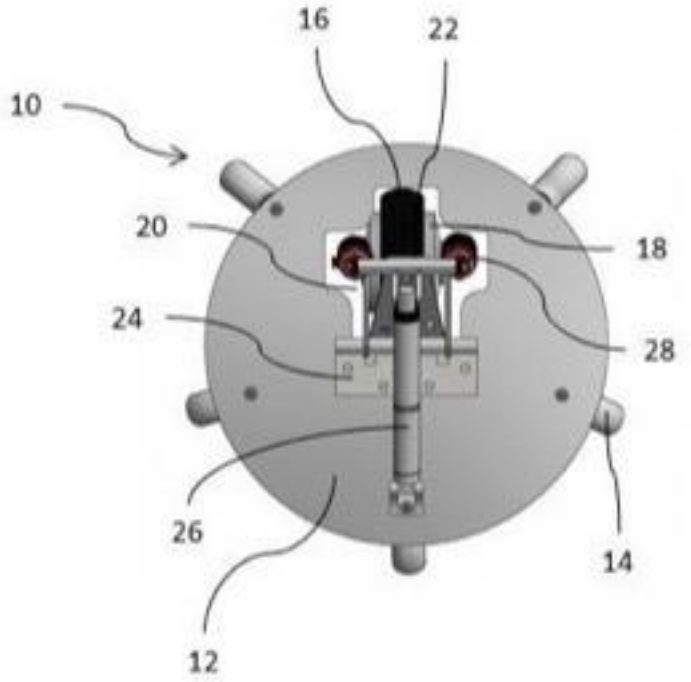

FIG. 2

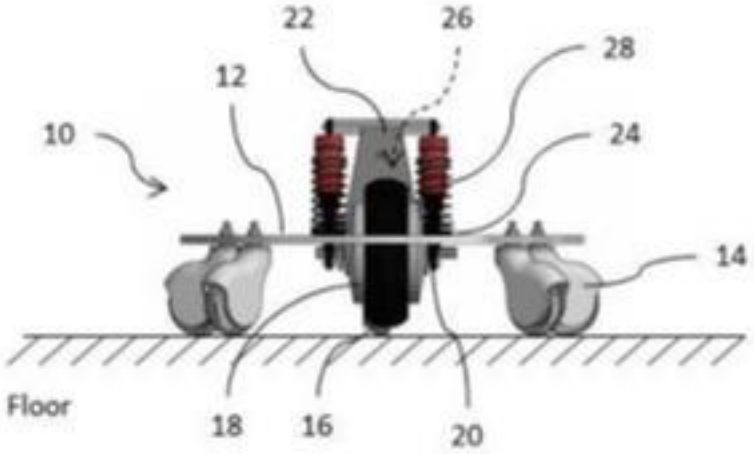

FIG. 3

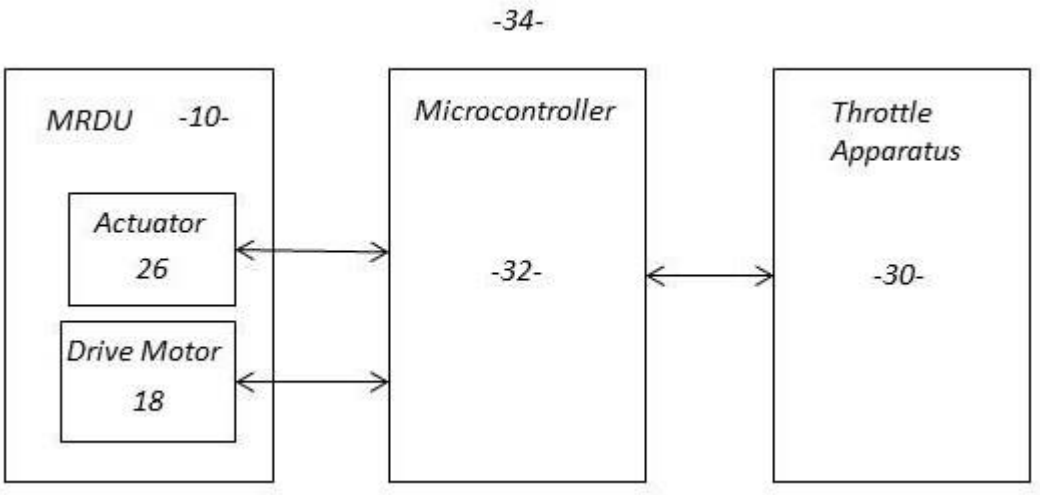

FIG. 4

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the invention in more detail, in Figs. 1, 2 and 3 there is shown an embodiment of the mobile robot drive unit (MRDU) **10**. The MRDU **10** includes a base plate **12**, a plurality of swivel castors **14**, a drive wheel **16**, a drive motor **18**, motor drive apparatus **20** connecting drive motor **18** to drive wheel, a wheel positioning apparatus **22** for disposing drive wheel **16** unto the floor to provide power-assisted mobility and retracting drive wheel **16** off of floor when manual mobility is desired. In the embodiment shown in Fig. 1, drive wheel **16**, drive motor **18**, and motor drive apparatus **20** are integrated and disposed within the hub of drive wheel **16**.

In more detail, still referring to the invention of Figs. 1, 2 and 3, the base plate **12** provides support and attachment points for disposing for a plurality of apparatuses. The size of the base plate **12** is sufficiently large and sufficiently strong and properly shaped to attach the plurality of swivel castors **14**, drive wheel **16**, drive motor **18**, motor drive apparatus, **20** and wheel positioning apparatus **22**. The diameter of the base plate **12** ranges from about 15 to 25 inches. The swivel castors **14** are disposed beneath the base plate **12** and proximate to the outside edge of the base plate **12** and have a diameter of about 3 inches. The drive wheel **16** is disposed within the MRDU **10** such that its position can be extended to touch the floor or retracted to clear the floor. The drive wheel **16** has a diameter of about 6 inches. The drive motor **18** is typically electric, is capable of variable speeds and is of sufficient power to propel the MRDU **10** plus additional weight in the range of zero to about 300 pounds at speeds ranging from zero to about 20 feet per second. The motor drive apparatus **20** transfers motion from the drive motor **18** to the drive wheel **16** while maintaining the ability of the drive wheel **16** to be extended to touch the floor or retracted to clear the floor. The wheel positioning apparatus **22** extends the drive wheel **16** to touch the floor or retracts drive wheel **16** to clear the floor.

In more detail, still referring to Fig. 1, 2 and 3, the wheel positioning apparatus **22** includes a pivot mechanism **24** disposed to the base plate **12** that permits the articulation of the drive wheel **16**, an actuator **26** that moves the drive wheel **16** into the correct position and a suspension system **28** that provides the proper tension between the drive wheel **16** and the floor.

Referring now to the invention shown in Fig. 4, a diagram illustrating a representative embodiment of the elements of a speed control system **34** and their interactions is shown. The speed control system **34** includes a throttle apparatus **30**, microcontroller **32** and the MRDU **10**. The throttle apparatus **30** is positioned by the user to control the speed of the MRDU **10**. The microcontroller **32** inputs a signal from the throttle apparatus **30** and computes the proper signals to be sent to the actuator **26** and drive motor **16**. When the throttle apparatus **30** is set to zero speed by the user, the microcontroller **32** commands the actuator **26** to retract and commands the drive motor **16** to coast. When the throttle apparatus **30** is set to a non- zero speed by the user, the microcontroller **32** commands the actuator **26** to extend and commands the drive motor **16** to the commanded speed. The actuator **26** inputs the signal from the microcontroller **32** and retracts or extends, as commanded. The drive motor **18** receives the signal from the microcontroller **32** and turns at the commanded speed.

In broad embodiment, the present invention is a mobile instrumentation platform capable of both manual and power-assisted movement.

While the foregoing written description of the invention enables one of ordinary skill to make and use what is considered presently to be the best mode thereof, those of ordinary skill will understand and appreciate the existence of variations, combinations, and equivalents of the specific embodiment, method, and examples herein. The invention should therefore not be limited by the above described embodiment, method, and examples, but by all embodiments and methods within the scope and spirit of the invention.

PTZ Camera

PTZ (Pan Tilt Zoom) This is one of the most expensive but essential components of RITA, enclosed in a clear dome, protects the camera and can be wiped/sterilized from blood splatters etc if in ER rooms.

Pertexa chooses PTZOptics robotic PTZ cameras for their Telemedicine Robot deployment in rural California

Pertexa Healthcare Technologies, Inc, the California-based telemedicine company announces they have selected PTZOptics robotic PTZ cameras for their flagship product RITA (**R**emote **I**ntelligent **T**eleHealth **A**ssistant). These telemedicine robots will be deployed with the number of the latest, state-of-the-art technologies and allow doctors full PTZ camera control remotely from anywhere in the world. The specialties will include dermatology, cardiology, pain management, OB/GYN, orthopedic and primary care.

PTZOptics USB camera line supports absolute UVC control allowing Pertexa to control the robotic PTZ functions through a simple USB connection to RITA. This allows doctors working remotely to interact in real time with patients while also zooming into particular areas of interest during a telemedicine consult.

RITA allows doctors to remotely evaluate the severity of an illness or injury and determine the best course of action through compatible medical devices and video consultation. Physicians control the camera to examine patients remotely and have immediate access to electronic health records, EKG results, blood pressure and oxygen readings, and any other equipment utilized to medically diagnose an injury or illness.


RADEKAL
PERTEXA