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(54) Title: MULTI-UTILITY MULTI-OBJECT TRANSFORMABLE PORTABLE MOBILITY APPARATUS

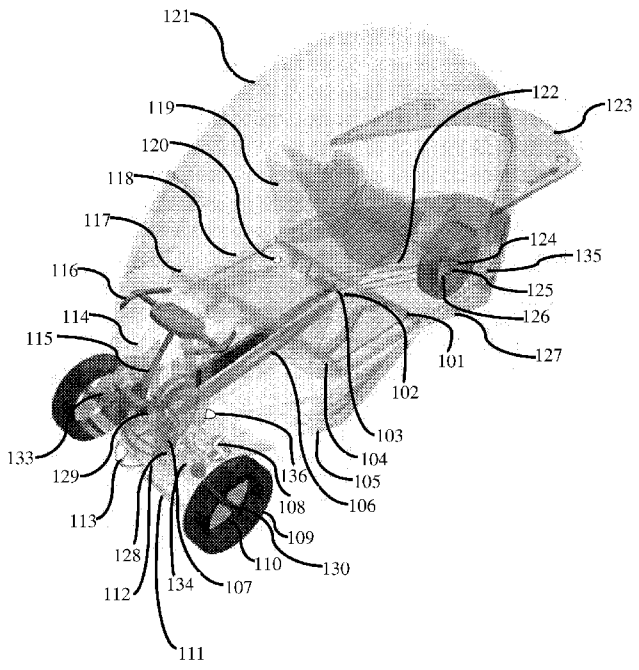

FIG. 1

(57) Abstract: The present invention discloses personalized portable inter-convertible multi-utility apparatus. The mobility apparatus is converted to a plurality of indoor and outdoor equipment like a bed, a seating chair, a travelling bag, a dining table, a a study table, a sofa, a laptop table, a workstation, a shopping trolley, a tent, a lounger, a personal commuting vehicle, a social commuting unit, an exercycler and an emergency stretcher. The mobility apparatus comprises a plurality of hardware, software and firmware add-ons. The personalized mobility apparatus has plurality of multiple uses, and emotional stimulation system and information gathering and communication system, and personalization system.

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MULTI-UTILITY MULTI-OBJECT TRANSFORMABLE PORTABLE MOBILITY APPARATUS

BACKGROUND

Technical Field of Invention

[001] The embodiments herein generally relates to a personalized mobility apparatus and particularly related to a portable apparatus inter-convertible to multiple apparatus suited for commutation, sheltering, official work, Health, Communication, rest and household items. The embodiments herein more particularly relates to a personalized apparatus for conserving exhaustible energy sources and enhancing object and space utility.

Description of Related Art

[002] An inter-convertible apparatus is basically is single designed in such a way that by flexing, sliding and collapsing its parts it results into multiple subsidiary items. Now-a-days with increasing population space and energy usage has increased, so to optimized these socially needed constraints, industries are trying to make inter-convertible apparatus.

[003] One of the prior arts discloses a convertible furniture comprising a piece of furniture having a standard configuration and a first converted configuration. The standard configuration has a first furniture use and the first converted configuration has a second furniture use and the first furniture use and the second furniture use differ. In the standard configuration the first converted configuration is at least partially hidden so that on casual observance the second furniture use is not readily apparent from the first furniture use.

[004] Another prior art discloses an electric vehicle, in particular electric-person vehicle, or hybrid electric vehicle, especially hybrid electric passenger vehicle, with at least three wheels, which can be both up and operated individually, as well as at least one expansion

module and / or at least one identical motor vehicle or a motor vehicle of the same type in the prior and during the journey is electro-mechanically coupled and uncoupled well again.

[005] Another prior art discloses a convertible office furniture has a tabletop of the segment in a shape of a circle sector limited from inside of the circle by a sector of the circle with the centre displaced in relation to the circle sector centre which creates space for a revolving armchair which is located on extension arm besides the tabletop of the segment is suspended by telescopic columns which are slideable upwards together with the tabletop; the columns are suspended on the base which has a shape of a circle sector corresponding to the circle sector of the table top of the segment; moreover above and beneath the tabletop of the segment arc shaped lockers and equipped with circumferential blinds which have one complete and stable side and are located as well as arc slideways for blinds set on a circumference of a circle outside blind lockers.

[006] However, the prior art convertible commuter apparatus like mentioned in DE 202012002846 U1, and Hiriko (a concept car designed at MIT) have a folding nature but still limited to utility of a significant space usage which do not resolve a space problem optimally. Further the prior arts are limited to a specific area of utility and cannot be extended to be used as household or official or outdoor purposes. In addition to this, the prior arts disclosing convertible furniture also encompass a large area and deign complexity is much higher which in turn increases cost.

[007] In the view of foregoing, there is a need for a personalized inter-convertible apparatus with optimal space and energy conservation. Also, there is a need for an inter-convertible apparatus with higher portability and ability to collapse or flex or fold or convert into a plurality of commutation units, household units, official units, health units and outdoor units.

[008] The above mentioned shortcomings, disadvantages and problems are addressed

herein, as detailed below.

SUMMARY OF INVENTION

[009] The primary object of the embodiments herein is to provide a portable personalized utility and mobility apparatus.

[0010] Another object of the embodiments herein is to provide a convertible mobility apparatus to be used for personal or social or public commutation.

[0011] Yet another object of the embodiments herein is to provide a convertible mobility apparatus to be used for resting purpose in a sleeping as well as various sitting positions.

[0012] Yet another object of the embodiments herein is to provide a convertible mobility apparatus to be used for health related purposes like cycling, exercising or crunching.

[0013] Yet another object of the embodiments herein is to provide a convertible mobility apparatus to be used for official purposes like office table, laptop stand work desk, cubicle etc.

[0014] The various embodiments herein disclose a personalized portable inter-convertible multi-utility apparatus. The apparatus comprises a plurality of tyres, a two-way joinery unit, a power assist component, a powertrail component, a base body unit, a twin way hinge unit, a chain drive, a folding pedal unit, a folding rear view mirror, an in-tyre suspension unit or an independent suspension unit, a turn assembly, a crash-resist bonnet base assembly, a central control unit (CCU), a crash resist chassis, a lever arm steering column, a central info–console steering, an airvent intelli-seat, seat belts, a backflip seat, a wireless transceiver, a dynamic shell, a rear spring suspension, a rear frame locking unit, a brake mechanism, a power supply motor, a power drive gear, a shell lock, a fuel storage, a controller unit, a sprocket gear, a hub brake, a mood enhancer, a combo focus lamps, a plurality of skins, an independent solar

lighting, an integrated screen, an antennae and a combo recharge unit. The plurality of tyres comprises a plurality of front tyres and rear tyres. The two-way joinery unit comprises a plurality of flexing mechanism with various degree of freedom to flex. The power assist component is connected to the two-way joinery unit through a horizontally opposite hinging mechanism. The power assist component is connected to the rear tyres and/or to the front wheels to power the vehicle in plurality of ways. The powertrail component is connected to the power assist component at a specific distance from a longitudinal centre. In case of rear wheel drive and with universal and/or ball joints along with train assembly. In case of front wheel drive, with a universal joint or ball joint to power the front wheel and combination of both in all-wheel drivefront power destribution in combination with rear power trail. The body unit support the twin way joinery unit, the power assist component and the powertrail component. The twin way hinge is connected to a base body unit with a wide degree of angular movement. One end of the chain drive is connected to the powertrail component. The folding pedal unit is connected to an end of the chain drive horizontally opposite to end connected to the powertrail component and it folds through an axis to fold and unfold as per requirement. The folding rear view mirror is connected to the base body unit. The folding rear view mirror comprises a plurality of image sensors and miniaturized cameras. The in-tyre suspension unit forms an interior of the plurality of tyres. The in-tyre suspension unit is made of alloy metal and materials with ability to absorb shock and vibrations. Alternatively traditional and intellignent modern suspensions can also be used as option. The turn assembly is connected to the front tyres and has various degree of freedom for angular movement. The crash-resist bonnet base assembly resides in conjunction with turn assembly. The central control unit is provided at a central location in close displacement with respect crash-resist bonnet base assembly. The crash resist chassis is connected form the skeleton and base of the crash-resist bonnet base assembly. The crash resist chassis lies in a plane behind the crash-resist bonnet base assembly. The lever arm

steering column is connected to the central control unit. The central info-console steering is connected to an end of lever arm steering column. The central info-console steering comprises a tablet. The tablet interacts with the central control to fetch a plurality of instantaneous data pertaining to a plurality of parameters and condition of the mobility apparatus. The airvent intelli-seat resides over the base body unit. The intelli-seat is inflatable in nature with multiple flexing angle. The seat belt is connected to the airvent intelli-seat. The backflip seat is attached to the airvent intelli-seat and seat belt and the airvents can provide for conditioned or heated air enveloping efficiently to the user's body. The backflip seat facility various angular movement at a plurality of flexing points forming a back rest for a user. The wireless transceiver is attached on the base body unit. The dynamic shell is attached onto the base body unit with an area to encompass the mobility device. The dynamic shell is either inflatable in nature and/or also have sliding folding shell units which slides and folds into a place with multiple flexing a resting junctions. The dynamic shell comprises a plurality of solar panels, as an option, as well as suitable projection unit. The rear spring suspension is connected to the chain drive and the base body unit and is located near the rear tyres or in-tyre suspension. The rear frame locking unit is attached to the rear tyres. The brake mechanism is attached to the rear tyres closing onto the in-tyre suspension unit. The power supply motor resides at a plurality of places including central base of front base or rear unit or within tires of rear and / or all tires. The power drive gear provides is connected to the powered tyres and the chain drive to transfer the power of the chain drive onto the powered tyres. The shell lock is provide at the base body unit and control a locking of the dynamic shell at a plurality of angular and linear positions, manually or as powered option. The fuel storage unit is provided at a central space of the base body unit, to bring balance to centre of gravity. The fuel storage unit is connected to the CCU. The controller unit is connected to the motor. The sprocket gear is connected to the chain drive and a pedal unit. The hub brake is attached closely to the in-tyre suspension unit of the front tyres to

allowing an efficient. The mood enhancer is provide at a plurality of places on the base body unit, the dynamic shell and the crash resist chassis. The combo focus lamps forms a front part of the mobility apparatus and is connected to the crash resist chassis. The plurality of skins, and modular/personalization units are provided at a plurality of location in the dynamic shell, the crash resist chassis and the base body unit. The plurality of skin comprises a plurality of mood and emotion sensor. The plurality of sensor of skins are connected to the CCU. The independent solar lighting comprises a plurality of lighting strips and is connected to the CCU. The integrated screen is connected to the inflated or a variable angularly folded dynamic shell and rest over the crash resist chassis. The antennae is connected the CCU and transfers a data from a personal mobile or computing device to the CCU and other gadgets/lighting/horn/controls/mirrors/remote folding systems or transformable parts or mood enhancer and skin enhancements screens etc. The combo recharge unit comprises an alternator and a rechargeable battery panel. The alternator is connected to the chain drive. The heating/ air conditioning/climate control and air ionization/filtering unit can be optionally fitted in the base unit with vents supply at different zones of the unit, and in different adaptations.

[0015] According to one embodiment herein, the apparatus is converted to a plurality of indoor and outdoor equipment like a bed, a seating chair, a sofa ,a divan, a work, a G.T. table, homeless shelter, a compact caravan, an exercycle, a personal entertainment system and gaming console, a 3d dome cinema, an office cubicle, a ladder, a stool, a centre table unit, a travelling bag, a dining table, a study table, a sofa, a laptop table, a workstation, a shopping trolley, a tent, a lounger, a personal commuting vehicle, a social commuting unit and an emergency stretcher and ambulance vehicle, a mobility scooter, etc.

[0016] According to one embodiment herein, the apparatus is convertible to a city commuter vehicle by plugging a plurality of individual mobility apparatuses in a plurality of rows and columns to a host vehicle. The individual mobility apparatuses are driven/guided by

the host vehicle/ formation .

[0017] According to one embodiment herein, the base body unit comprises a base armature further comprising including an armature, a chassis, a plurality of fenders, a plurality of front and rear design elements, a plurality of air vents, and main base unit of a front and a rear unit.

[0018] According to one embodiment herein, the interior of the mobility apparatus comprises a plurality of hardware add-ons. The hardware add-ons comprises a sun-screen/blind/curtain, a mosquito net, a personal gym/full body workout, a portable gas stove, an induction cooking unit, a portable toilet, a plurality of basic medical equipment, a 2-Dimensional printer, 5.1/7.1 surround sound system, a cell phone or personal computer combo unit, a professional video conferencing system, a music/entertainment/gaming console, a planetarium, a dome screen projection/virtual reality combo unit, a sky-gazers telescopic unit, a high-end sensing and medical equipment, technical gadgets and equipments, a 3-Dimensional printers and a washing equipment, etc.

[0019] According to one embodiment herein, the mobility apparatus is further used as a plug and use chamber attachable to a modular tractor or a bus or a trailor or a helicopter or a ship or an aeroplane or a ship or a motor boat or a tank or a SUV, or a variety of transportations like army and naval units, mechanical and agro based units, factory units, shopping unit, advertisements display units, goods and heavy machinery units etc.

[0020] According to one embodiment herein, the apparatus further comprises a plurality of software and firmware add-ons. The plurality of software and firmware add-ons are downloaded from a central server or cloud base or modern data management technologies. The plurality of software and firmware add-ons increase various functionalities of mobility apparatus and entertains/infotains/enhances/relaxes/eases a user experience.

[0021] According to one embodiment herein, the air vent intelli-seats further comprises

a climate control unit. The climate control unit inflates the intelli-seats with hot or cold air as per an atmosphere or a health of the user or a mood of the user. The climate control unit also absorbs humid air and creates a humidity free interior. The intelli-seats flexes at various angles and inflates to a various levels on the basis of a mood of the user. The intelli-seats in seating mode as workdesk/chair or sleeping as bed or divan, and variety of other purpose as sofa/lounger etc.

[0022] According to one embodiment herein, the power supply unit is an electric based or a fossil fuel based or hybrid based unit or compressed air engine based, or hydrogen fuel cells, or fuel cells, or power pack capacitor based, or human powered, solar powered, or windpowered or wave powered or adaptable to any future or present power technology powered.

[0023] According to one embodiment herein, the mobility apparatus is further convertible to a cassette fuel changer system in which a fuel box and or the batteries of the vehicle is removed from the car on the press of a button or single stimulus and a new recharged pack is fitted within a very small time frame to refuel/recharge the vehicle.

[0024] According to one embodiment herein, the mobility apparatus is used as an emotional stimulating system. The mobility apparatus has an electronic/manual system which produces reverberating/stimulating noise and vapour fog to give an effect and a noise linked to an accelerator unit creating an effect of a power racer vehicle to enhance emotional experience. The said emotional simulating system along with variety of natural/musical/mechanical sound effects and visual effects are used to elevate the mood levels of the person using the apparatus.

[0025] According to one embodiment herein, the mobility apparatus is used as a mood enhancer system. The mobility apparatus has a customizable mascot or avatar which talks and communicates through vision or touch or auditory or kinesthetic or olfactory or taste stimulation to enhance the mood of the user(s) and also act as security and safety system of the

apparatus and does variety of tasks and interactions.

[0026] According to one embodiment herein, the mobility apparatus is used as a customizable skin and add-on shapers. The mobility apparatus is customized with graphical or engraved prints or murals frescoes or designer elements to suit individual's taste and/or cultural or companies tastes and branding. The mobility apparatus adaptively changes into plurality of aesthetic and visual apperance and personalized, including personalized storage, gadgets, equipments, style and statement.

[0027] According to one embodiment herein, the apparatus is cascade-able to other apparatuses. A mobile rogue host system elapses a predetermined route in city (intercity or cross country). All the personal mobility apparatuses running in a zone receives a notification pertaining to a time of arrival of the host system in their vicinity along with its route details. The user of mobility apparatus is facilitated to connect the apparatus to the host system in chain manner. The chain manner comprises cascading of one mobility apparatus to the host system and further mobility apparatuses are adjoined in series to each other. The host system further comprises a wireless verification module and each apparatus is associated with a unique ID code. The verification module wirelessly checks and verifies an authenticated mobility apparatus as soon as the user of corresponding mobility apparatus sends a request for on/off-boarding.

[0028] According to one embodiment herein, the mobility apparatus is attachable within the present transportation vehicles like intercity or intra-city buses, trains, flights, waterways etc. The user checks-in before entering the transportation vehicles with a magnetic card or smart chip card associated with the mobility vehicle. Only, an authentic card and mobility apparatus is permitted to get attached within the transportation vehicle. The magnetic card or smart chip card is enabled with a RFID or a technology that continuously interacts with a receiver /transfer/communicating/ RFID device attached in the transportation vehicle. The

magnetic card or technology also contains card account details of its holder. As soon as, the card holder check-out of the transportation system, a travelling fee is automatically deducted from the card holder's account and a notification is sent to over a mobile device and email of the card holder. The mobility apparatus is also used in shopping trolley adaptation, where the card is charged when a product with barcode is put in bad of the trolley, the card is charged, collectively at an exit point or when required by stimulus or signal.

[0029] According to one embodiment herein, the mobility apparatus is further used as personal space elevator vertically or in conjunction with an elevated cable networks. The cable networks are provided from a high rise building to another high rise building or towers or mountains/hills across islands or plateaus, falling in clear line of sight. Each high rise building/tower where the mobility apparatus is connected is treated as a node. The mobility apparatus is connected to the cable network through a host module present on each node. The host module verifies an authenticity of the mobility apparatus and allows an automated or manual system to connect the mobility apparatus to the cable network.

[0030] According to one embodiment herein, the mobility apparatus houses an emotional and mood enhancer through an implementation of an interaction system comprising a visual and sound stimulation system to elevate mood of a user. The interaction system further comprises a plurality of mascots or graphics interact with the user for data sharing or showing burnt calories burnt while exercycling or showing an amount energy generated or a geo-tracking or showing mechanical and maintenance report. The mood enhancer further comprises a sound of racer system attached to create dramatic reverberations and fog. The mood enhancer further comprises a led/screen lights to create visual mood effects along with aroma diffusers/massage and touch stimuli.

[0031] According to one embodiment herein, the mobility apparatus runs on a vivid fuel sources comprising conventional fossil fuel, biofuel, solar cells, human and animal waste,

bio and other wastes, hydrogen fuel, battery powered, compressed air technology, cell etc. Further a separate bio-digester gas block is optionally provided as add-on along with the apparatus where human and bio waste of homes is converted into gas which can be used further used to power the apparatus.

[0032] According to one embodiment herein, the combo recharge unit is placed variably in rear or front position of the mobility apparatus. The power transmitted to the wheels of the mobility apparatus can have mono combo recharge unit or also individual recharge unit in each wheel. The mobility apparatus is adapted suitably for off-road, desert use/snow use or amphibious use. The wheels are suitably replaced by the caterpillar tracks or a hovercraft fan and base as per user requirement.

[0033] According to one embodiment herein, the combo recharge unit is provide as detachable cartridge case enabling the quick replacement with a charged cartridge case comprising combo recharge unit.

[0034] According to one embodiment herein, the mobility apparatus is modulated to be used as vertical transportation system like elevator and road or apartment bridges. The mobility apparatus also becomes part of a traction or host pulley system of a highrise building façade and act as part of elevator conducting a vertical transportation system from the ground of the building to the required floor. Similarly a horizontal transportation or angular escalaor type of transportation are adapted for the mobility apparatus.

[0035] According to one embodiment herein, the mobility apparatus is adaptable to be used as overhead transportation system through the readily available overhead power transmission lines and ropeway networks.

[0036] According to an embodiment herein, the apparatusis a combination of mobility and transportation, with a plurality of enhancements for flexing, folding and transforming into a plurality of furniture comprising a work desk, an ironing board, an ergonomic chair, a dining

table, a recliner, a sofa, a lounger, a bed, a stretcher, a portable ambulance, an off-roader, a foldable tent camper, an army vehicle and shelter, an emergency shelter, a ladder, a motor home, a motor boat, an exercycle, a personal gymming equipment, a farming equipment, a transportation vehicle, a vehicle for special purposes, a good carrier, a display device, an advertising device, a quick store, a foldable market, a display van, a mobility device for handicapped and senior citizens, a part of public transportation system, a personal utility vehicle, a portable office and having console, a cart, a portable shelter, a medical device base and a portable workshop.

[0037] These and other aspects of the embodiments herein will be better appreciated and understood when considered in conjunction with the following description and the accompanying drawings. It should be understood, however, that the following descriptions, while indicating preferred embodiments and numerous specific details thereof, are given by way of illustration and not of limitation. Many changes and modifications may be made within the scope of the embodiments herein without departing from the spirit thereof, and the embodiments herein include all such modifications.

BRIEF DESCRIPTION OF DRAWINGS

[0038] The other objects, features and advantages will occur to those skilled in the art from the following description of the preferred embodiment and the accompanying drawings in which:

[0039] **FIG. 1** illustrates a personalized portable inter-convertible multi-utility mobility apparatus, according to one embodiment herein.

[0040] **FIG. 2a-2d** illustrates a plurality of aesthetics for the personalized portable inter-convertible multi-utility mobility apparatus, according to one embodiment herein.

[0041] **FIG. 3** illustrates a sliding, flexing, folding and inflating mechanism for the

personalized portable inter-convertible multi-utility mobility apparatus, according to one embodiment herein.

[0042] **FIG. 4** illustrates a flexing of an interior of the personalized portable mobility apparatus to form a shelter and a resting product, according to one embodiment herein.

[0043] **FIG. 5** illustrates a flexing of an interior of the personalized portable mobility apparatus to form a workstation, according to one embodiment herein.

[0044] **FIG. 6** illustrates an implementation of the personalized portable mobility apparatus as plug-n-use flying apparatus, according to one embodiment herein.

[0045] **FIG. 7** illustrates an implementation of the personalized portable mobility apparatus as plug-n-use tractor apparatus, according to one embodiment herein.

[0046] **FIG. 8** illustrates an implementation of the personalized portable mobility apparatus as plug-n-use defence apparatus, according to one embodiment herein

[0047] **FIG. 9** illustrates an implementation of the personalized portable mobility apparatus as plug-n-use on road heavy vehicle, according to one embodiment herein.

C) DETAILED DESCRIPTION OF DRAWINGS

[0048] In the following detailed description, a reference is made to the accompanying drawings that form a part hereof, and in which the specific embodiments that may be practiced is shown by way of illustration. The embodiments are described in sufficient detail to enable those skilled in the art to practice the embodiments and it is to be understood that the logical, mechanical and other changes may be made without departing from the scope of the embodiments. The following detailed description is therefore not to be taken in a limiting sense.

[0049] **FIG. 1** illustrates a personalized portable inter-convertible multi-utility mobility apparatus, according to one embodiment herein. With respect to FIG. 1, the personalized portable inter-convertible multi-utility apparatus comprises a plurality of tyres

109, a two-way joinery unit 101, a power assist component 102, a powertrail component 103, a base body unit 105, a twin way hinge unit 104, a chain drive 106, a folding pedal unit 107, a folding rear view mirror 108, an in-tyre suspension unit 110, a turn assembly 111, a crash-resist bonnet base assembly 112, a central control unit (CCU) 113, a crash resist chassis 114, a lever arm steering column 115, a central info–console steering 116, an airvent intelli-seat 117, a seat belt 118, a backflip seat 119, a wireless transceiver 120, a dynamic shell 121, a rear spring suspension 122, a rear frame locking unit 123, a brake mechanism 124, a power supply motor 125, a power drive gear 126, a shell lock 127, a fuel storage 128, a controller unit 129, a sprocket gear 130, a hub brake 131, a mood enhancer 132, a combo focus lamps 133, a plurality of skins 134, an independent solar lighting 135, an integrated screen 136, an antennae and a combo recharge unit. The plurality of tyres 109 comprises a plurality of front tyres and rear tyres. The two-way joinery unit 101 comprises a plurality of flexing mechanism with various degree of freedom to flex. The power assist component 102 is connected to the two-way joinery unit 101 through a horizontally opposite hinging mechanism. The power assist component 102 is connected to the rear tyres and or front wheel drive or all-wheel drive as required by connection of series of universal joints and / or ball joints. . The powertrail component 103 is connected to the power assist component 102 at a specific distance from a longitudinal centre. The base body unit 105 support the twin way joinery unit 101, the power assist component 102 and the powertrail component 103. The twin way hinge 104 is connected to a base body unit 105 with a wide degree of angular movement. One end of the chain drive 106 is connected to the powertrail component 103. The folding pedal unit 107 is connected to an end of the chain drive 106 horizontally opposite to end connected to the powertrail component 103. The folding rear view mirror 108 is connected to the base body unit 105. The folding rear view mirror 108 comprises a plurality of image sensors and miniaturized cameras. The in-tyre suspension unit 110 forms an interior of the plurality of tyres. The in-tyre suspension unit 110 is made of hard

metal with ability to absorb shock and vibrations. The turn assembly 111 is connected to the front tyres and has various degree of freedom for angular movement. The crash-resist bonnet base assembly 112 resides in conjunction with turn assembly 111. The central control unit 113 is provided at a central location in close displacement with respect crash-resist bonnet base assembly 112. The crash resist chassis 114 is connected form the skeleton and base of the crash-resist bonnet base assembly 112. The crash resist chassis 114 lies in a plane behind the crash-resist bonnet base assembly 112. The lever arm steering column 115 is connected to the central control unit 113. The central info-console steering 116 is connected to an end of lever arm steering column 115. The central info-console steering 116 comprises a tablet. The tablet interacts with the central control to fetch a plurality of instantaneous data pertaining to a plurality of parameters and condition of the mobility apparatus. The airvent intelli-seat 117 resides over the base body unit 105. The intelli-seat 117 is inflatable in nature with multiple flexing angle. The seat belt 118 is connected to the airvent intelli-seat 117. The backflip seat 119 is attached to the airvent intelli-seat 117 and the seat belt 118. The backflip seat 119 facility various angular movement at a plurality of flexing points forming a back rest for a user. The wireless transceiver 120 is attached on the base body unit 105. The dynamic shell 121 is attached onto the base body unit 105 with an area to encompass the mobility device. The dynamic shell 121 is inflatable in nature with multiple flexing a resting junctions. The dynamic shell 121 comprises a plurality of solar panels as well as suitable projection unit. The rear spring suspension 122 is connected to the chain drive 106 and the base body unit 105 and is located near a powered set of tyre/tyres 109. The rear frame locking unit 123 is attached to the rear tyres 109. The brake mechanism 124 is attached to the rear tyres closing onto the in-tyre suspension unit 110 and disc brakes or in-situ brakes in front tyres. A separate gadget A/C or a heating unit or a compact music system is placed at plurality of zones. The power supply motor 125 resides at a rear end of the base body unit 105 and is connected to the rear tyre or in-situ

of motor, or central front base. The power drive gear 126 provides is connected to the rear tyres in case of rear wheel drive and through ball/universal joints to the front wheels in case of all/front wheel drives along with the chain drive 106 to transfer the power of the chain drive 106 onto the rear tyres. The shell lock 127 is provide at the base body unit 105 and control a locking of the dynamic shell 121 at a plurality of angular and linear positions. The fuel storage 128 is provided at a central space of the base body unit. The fuel storage 128 is connected to the CCU 113. The controller unit 129 is connected to the power supply motor 125. The sprocket gear 130 is connected to the chain drive 106 and a pedal unit. The hub brake 131 is attached closely to the in-tyre suspension unit 110 of the front tyres to allowing an efficient. The mood enhancer 132 is provide at a plurality of places on the base body unit 105, the dynamic shell 121 and the crash resist chassis 114. The combo focus lams 133 forms a front part of the mobility apparatus and is connected to the crash resist chassis 114. The plurality of skins 134 are provided at a plurality of location in the dynamic shell 121, the crash resist chassis 114 and the base body unit 105. The plurality of skins 134 comprises a plurality of mood and emotion sensor. The plurality of sensor of skins are connected to the CCU 113. The independent solar 135 lighting comprises a plurality of lighting strips and is connected to the CCU 113. The integrated screen 136 is connected to the inflated or a variable angularly folded dynamic shell 121 and rest over the crash resist chassis 114. The antennae is connected the CCU 113 and transfers a data from a personal mobile or computing device to the CCU 113. The combo recharge unit comprises an alternator and a rechargeable battery panel. The alternator is connected to the chain drive.

[0050] **FIG. 2a-2d** illustrates a plurality of aesthetics for the personalized portable inter-convertible multi-utility mobility apparatus, according to one embodiment herein. With respect to FIG. 2, a base body unit and tyre arrangement of the personalized portable inter-convertible multi-utility apparatus is provided multiple design comprising a tear drop design

(FIG. 2a), a delta design (FIG. 2b), a car base design (FIG. 2c) and a kite design (FIG. 2d). The base body unit is of a triangular shape or an arc segment of a circle shape in the tear drop design. The tear drop design comprises two front tyre and a rear tyre. Further, the base body unit is of triangular shape with one front and two rear tyres in a delta design. The base body unit has identical to the four wheeler vehicle chassis design with two front and two rear tyres in the car design. The kite design has a one front tyre, two intermediate tyres and one rear tyre.

[0051] **FIG. 3a-3e** illustrates a different flexing, folding and inflating mechanism for the personalized portable inter-convertible multi-utility mobility apparatus, according to one embodiment herein. With respect to FIG. 3a, the folding mechanism comprises an arc folding for forming a dome shaped dynamic shell. In the arc folding, the multiple U-shaped metal or fibre based skeleton structures are provided which are hinged to two horizontally opposite points over the base body unit. Each skeleton structures is connected to another skeleton structure through a crushable material like thick polymer sheet. The arc folding and unfolding is provided movement of a top portion of one skeleton structure upto a predetermined angular displacement from a top portion of succeeding skeleton structure. If a first skeleton structure reaches the front crash resist bonnet unit and locks itself to the front crash resist bonnet unit, then a dome shape or the dynamic shell is formed. If the first skeleton structure locks itself at a certain angular displacement from the front crash resist bonnet unit, then a shelter is formed. Further the crushable material has a concave bending ability (FIG. 3a) as well as a convex bending ability (FIG. 3b). The mobility apparatus further implement a linear folding for an inter-conversion (FIG. 3c). The mobility apparatus also applies a folding of one section over another forming a sandwiched or layered folding structure. The mobility apparatus further adopts a sliding of one section over or under its succeeding segment again forming a layered folding structure (FIG. 3c). The mobility apparatus further comprises an inflation and deflation technique as a collapsing strategy (FIG. 3e).

[0052] According to one embodiment of the present invention, each unit of the disc brake mechanism slides and rest in each other until a half circle is opened. In an alternative design disc bake mechanism is made of high tensile, stretchable fabric or composite material which folds on individual arm of segmented truss unit which then rotate on either side to completely open up. In a further alternate design, the glass or composite windscreen and the back panel folds and slide into the base body unit.

[0053] According to one embodiment of the present invention, the mobility apparatus is initially into a shape of a carriage bag. A lower arm of the airvent intelli-seat is dragged out and locked in a position to form a base of chair, while the backrest is achieved by already present upper airvent intelli-seat cushion support.

[0054] According to one embodiment of the present invention, the lower arm of chair is pulled out from an upper and or lower airvent intelli-seat and rest in position to form a hand support for the chair. Further the base body unit is unlocked and spread apart to unfold into the flat bed surface. Further the flat bed is placed with extra cushions to form a divan or an upper part of intelli-seat, while the lower base body unit is opened to form a lounger. The lower portion of intelli-seat present at both side of base body unit is folded to form a centre table/table unit. Further the intelli-seat is folded like seat arrangement of the portability device mode, without the shell covering, which can be used as sofa/rest chair. A back flap can be used as an instant reading table or utility desk in the bed or chair mode.

[0055] **FIG. 4** illustrates a flexing of an interior of the personalized portable mobility apparatus to form a shelter and a resting product, according to one embodiment herein. With respect to FIG. 4, in bed mode, the upper shells are closed so that the device is used like a commuter convoy or an external shelter.

[0056] According to one embodiment in the present invention, when in bed mode, the collapsing steering arm can be engaged with the power on, to drag the stretcher/goods/luggage

transporter/market commuter. The motorized stretcher mode can be engaged to use the device as shopping cart/advertising display unit/display table etc.

[0057] According to one embodiment of the present invention, the mobility apparatus is used as an exercycle which can be engaged to burn calories through cycling and also with lever arm action mode. Further, in an office cubicle mode, the powertrail unit can be engaged to make a free run and connected to the alternator, so during a cycling, the energy is also generated and stored simultaneously through the alternator and recharges the fuel storage /batteries of the apparatus.

[0058] According to one embodiment of the present invention, in the commuter mode, the cycling functions by the user could be used to propel/move the commuter vehicle from one point to another directly.

[0059] According to one embodiment of the present invention, the cycling generates power through the alternator /generator unit to recharge batteries/capacitors/fuel unit for running an electric/hybrid motor.

[0060] According to one embodiment of the present invention, in the workdesk mode, depending on design and model, either the cycler arm projects outside or and an extra add-on is engaged with the workdesk to perform the exercycle.

[0061] **FIG. 5** illustrates a flexing of an interior of the personalized portable mobility apparatus to form a workstation, according to one embodiment herein. With respect to FIG. 5, the internal intelli-seat is folded to form internal seat mode which can be used as workdesk with desk fitting over steering arm. The said combination of workdesk with steering arm can used as office cubicle with personal heating/ac or motorhome.

[0062] According to one embodiment of the present invention, a series of personalized mobility apparatus placed in a garden or open slab or zone and connected with wifi is used as plug and play office/school/emergency relief/ seminar/etc system.

[0063] According to one embodiment of the present invention, The apparatus can be made of multiple use or combination of either carbon fiber, hemp fibre, glass fiber, PU, transparent acrylic and glass, photochromatic film/glass/stretch fabric, aluminum metal and steel alloys, wooden and natural recycled products, combination polyvinyl, rubber in varied forms, elastic and flex, fabrics and leathers, solar and photo voltaic cells, conductive alloys and safety cocooning stretch fabrics and plastics, foams of varied nature, coiled and combination springs of tension metals/alloys/flex/fibers. The mirrors of varied nature, lenses, choirs, cushioning, films, vinyls, stickers, wires and combination of such innovative and modern materials, fire and water proof chemicals and coatings and linings, pads, stiffeners, glue, welds, rivets, joineries of varied kinds, pivots and nails, liners, etc.

[0064] The mobility apparatus is a multi-utility device which caters plurality of basic and advance human needs in daily life. For the articles related for personal commutation, furniture, office space, emergency compact ambulance, homeless shelter, motorhome, first public private transportation, city transport, office workspace and health consciousness, people spend a lot and for storing them, they need space. The present mobility apparatus solves most of these needs with a single unit which is also portable in nature having a size trolley after folding. The present mobility apparatus also saves huge amount of energy as it is highly fuel efficient and can also run purely on electrical power or variety of modern green methodolgy and highly adaptable. The present mobility apparatus assist in preserving and saving a plurality of environmental assets like trees and natural resources by providing a multi-usage single unit to replace various products used for personal and social daily life purposes and thus is highly environmental friendly and adapts in easy implemention green technology in manufacturing, maintaining, usage, transporting, recycling. It can become part of vertical/horizontal transportation by elevator or part of ropeway system and save construction of expensive bridges over mountains and rivers, oceans mountains etc. save felling of trees by eliminating

construction of roads/bridges etc by creating and overhead ropeway connecting system for distant villages/hillocks/islands etc. provide habitable and useable economical emergency or army/Homeless persons shelter on borders or in challenging conditions or for fr recreation motorhome purpose or portable office.

[0065] According to one embodiment of the present invention, the mobility apparatus reaches to indoors and outdoors spot of emergency incidents and pick up the injured/ailing human while acting act as a stretcher and travel/transport through slender alleyways and reach hospital/safe area/avoiding traffic or difficult to access for traditional ambulance vehicles and can act as compact ambulance and also as hospital bed with variable attachments and fold mechanism. In a personal mobility mode, the apparatus has G-SENSORS which activate the speed limit function. Thus in the personal/handicap/senior citizen mobility mode, the maximum speed is 0-12 kms so that it is used on pavements, indoors of malls airports etc.

[0066] It is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation. Therefore, while the embodiments herein have been described in terms of preferred embodiments, those skilled in the art will recognize that the embodiments herein can be practiced with modification within the spirit and scope of the claims.

CLAIMS:

I claim:

1. A personalized portable inter-convertible multi-utility apparatus comprising:

a plurality of tyres, wherein the plurality of tyres comprises a plurality of front tyres and rear tyres;

a two-way joinery unit, wherein the two-way joinery unit comprises a plurality of flexing mechanism with various degree of freedom to flex;

a power assist component, wherein the power assist component is connected to the two-way joinery unit through a horizontally opposite hinging mechanism, wherein the power assist component is connected to the rear tyres;

a powertrail component, wherein the powertrail component is connected to the one power assist component at a specific distance from a longitudinal centre;

a base body unit, wherein the body unit support the twin way joinery unit, the power assist component and the powertrail component;

a twin way hinge unit, wherein the twin way hinge is connected to a base body unit with a wide degree of angular movement;

a chain drive, wherein one end of the chain drive is connected to the powertrail component;

a folding pedal unit, wherein the folding pedal unit is connected to an end of the chain drive horizontally opposite to end connected to the powertrail component ;

a folding rear view mirror, wherein the folding rear view mirror is connected to the base body unit, wherein the folding rear view mirror comprises a plurality of image sensors and miniaturized cameras;

an in-tyre suspension unit, wherein the in-tyre suspension unit forms an interior of the plurality of tyres, wherein the in-tyre suspension unit is made of hard metal with ability to absorb shock and vibrations;

a turn assembly, wherein the turn assembly is connected to the front tyres and has various degree of freedom for angular movement;

a crash-resist bonnet base assembly, wherein the crash-resist bonnet base assembly resides in conjunction with turn assembly;

a central control unit (CCU), wherein the central control unit is provided at a central location in close displacement with respect to the crash-resist bonnet base assembly;

a crash resist chassis, wherein the crash resist chassis is connected form the skeleton and base of the crash-resist bonnet base assembly, wherein the crash resist chassis lies in a plane behind the crash-resist bonnet base assembly;

a lever arm steering column, wherein the lever arm steering column is connected to the central control unit;

a central info–console steering, wherein the central info-console steering is connected to an end of lever arm steering column, wherein the central info-console steering comprises a table, wherein the tablet interacts with the central control to fetch a plurality of instantaneous data pertaining to a plurality of parameters and condition of the mobility apparatus;

an airvent intelli-seat, wherein the airvent intelli-seat resides over the base body unit, wherein the intelli-seat is inflatable in nature with multiple flexing angle;

a seat belt, wherein the seat belt is connected to the airvent intelli-seat;

a backflip seat, wherein the backflip seat is attached to the airvent intelli-seat and the seat belt, wherein the backflip seat facility various angular movement at a plurality of flexing points forming a back rest for a user;

a wireless transceiver, wherein the wireless transceiver is attached on the base body unit;

a dynamic shell, wherein the dynamic shell is attached onto the base body unit with an area to encompass the mobility device, wherein the dynamic shell is inflatable in nature with multiple flexing an resting junctions, wherein the dynamic shell comprises a plurality of solar panels as well as suitable projection unit;

a rear spring suspension, wherein the rear spring suspension is connected to the chain drive and the base body unit and is located near the rear tyres;

a rear frame locking unit, wherein rear frame locking unit is attached to the rear tyres;

a brake mechanism, wherein the brake mechanism is attached to the rear tyres closing onto the in-tyre suspension unit;

a power supply motor, wherein the power supply motor resides at a rear end of the base body unit and is connected to the rear tyre;

a power drive gear, wherein the power drive gear provides is connected to the rear tyres and the chain drive to transfer the power of the chain drive onto the rear tyres;

a shell lock, wherein the shell lock is provide at the base body unit and control a locking of the dynamic shell at a plurality of angular and linear positions;

a fuel storage, wherein the fuel storage is provided at a central space of the base body unit, wherein the fuel storage is connected to the CCU;

a controller unit, wherein the controller unit is connected to the power supply motor;

a sprocket gear, wherein the sprocket gear is connected to the chain drive and a pedal unit;

a hub brake, wherein the hub brake is attached closely to the in-tyre suspension unit of the front tyres to allowing an efficient;

a mood enhancer, wherein the mood enhancer is provide at a plurality of places on the base body unit, the dynamic shell and the crash resist chassis;

a combo focus lamps, wherein the combo focus lams forms a front part of the mobility apparatus and is connected to the crash resist chassis;

a plurality of skins, wherein the plurality of skins are provided at a plurality of location in the dynamic shell, the crash resist chassis and the base body unit, wherein the plurality of skin comprises a plurality of mood and emotion sensor, wherein the plurality of sensor of sins are connected to the CCU;

an independent solar lighting, wherein the independent solar lighting comprises a plurality of lighting strips and is connected to the CCU;

an integrated screen, wherein the integrated screen is connected to the inflated or a variable angularly folded dynamic shell and rest over the crash resist chassis;

an antennae, wherein the antennae is connected the CCU and transfers a data from a personal mobile or computing device to the CCU;

a combo recharge unit, wherein combo recharge unit comprises an alternator and a rechargeable battery panel, wherein the alternator is connected to the chain drive;

wherein, the air vent intelli-seats further comprises a climate control unit, wherein the climate control unit inflates the intelli-seats with hot or cold air as per an atmosphere or a health of the user or a mood of the user, wherein the climate control unit also absorbs humid air and creates a humidity free interior, wherein the intelli-seats flexes at various angles and inflates to a various levels on the basis of a mood of the user.

2. The apparatus as claimed in claim 1 is converted to a plurality of indoor and outdoor equipment like a bed, a seating chair, a travelling bag, a dining table, a study table, a sofa, a laptop table, a workstation, a shopping trolley, a tent, a lounger, a personal commuting vehicle, a social commuting unit, an exercycler and an emergency stretcher.

3. The apparatus as claimed in claim 2 is convertible to a city commuter vehicle by plugging a plurality of individual mobility apparatuses in a plurality of rows and columns to a host vehicle, wherein the individual mobility apparatuses are driven by the host vehicle/formation giving option for mass public transportation with flexibility of private mobility device comfort.

4. The apparatus as claimed in claim 1, wherein the base body unit comprises a base armature further comprising including an armature, a chassis, a plurality of fenders, plurality of design elements / personalization modular units/elements, a plurality of front and rear design elements, a plurality of air vents, and main base unit of a front and a rear unit.

5. The apparatus as claimed in claim 1, wherein the interior of the mobility apparatus comprises a plurality of hardware add-ons, wherein the hardware add-ons comprises a sun-screen/blind/curtain, a mosquito net, a personal gym/full body workout, a portable gas stove, an induction/microwave/cooking unit, a portable toilet, a plurality of basic medical equipment, a 2-Dimensional printer, 5.1/7.1 surround sound system, a cell phone or personal computer combo unit, a professional video conferencing system, a music/entertainment/gaming console, a planetarium, a dome screen projection/virtual reality combo unit, a sky-gazers telescopic unit, a high-end sensing and medical equipment, a 3-Dimensional printers and a washing equipment/etc.

6. The apparatus as claimed in claim 1 comprises a plurality of software and firmware add-ons, wherein the plurality of software and firmware add-ons are downloaded from a central server, wherein the plurality of software and firmware add-ons increase various functionalities of mobility apparatus.

7. The apparatus as claimed in claim 1, wherein the power supply unit is an electric based or a fossil fuel based or hybrid based unit or compressed air based or fuel cell based.

8. The apparatus as claimed in claim 1, wherein the power supply unit is in a form of removable cartridge, wherein the cartridge comprises a rechargeable battery panel, wherein a drained cartridge is replaced with a charged cartridge in case of low power or battery level in parts or totality of cell units.

9. The apparatus as claimed in claim 1 houses an emotional and mood enhancer through an implementation of an interaction system comprising a visual and sound stimulation system to

elevate mood of a user, wherein the interaction system further comprises a plurality of mascots or graphics interact with the user for data sharing or showing burnt calories burnt while exercycling or showing an amount energy generated or a geo-tracking or showing mechanical and maintenance report, wherein the mood enhancer further comprises a sound of racer system attached to create dramatic reverberations and fog, wherein the mood enhancer further comprises a led/screen lights to create visual mood effects, digital scanning of mood, and provide for mood upliftment/safety scanning in case of sleepy rider/safety alarms/brakes and emergency reaction systems/ medical scanning and data transfer and help through online/offline servers or netwrking with other professional/users.

10. The apparatus as claimed in claim 1 is a combination of mobility and transportation, with a plurality of enhancements for flexing, folding and transforming into a plurality of furniture comprising a work desk, an ironing board, an ergonomic chair, a dining table, a recliner, a sofa, a lounger, a bed, a stretcher, a portable ambulance, an off-roader, a foldable tent camper, an army vehicle and shelter, an emergency shelter, a ladder, a motor home, a motor boat, an exercycle, a personal gymming equipments, a farming equipment, a transportation vehicle, a vehicle for special purposes, a good carrier, a display device, an advertising device, a quick store, a foldable market, a display van, a mobility device for handicapped and senior citizens, a part of public transportation system, a personal utility vehicle, a portable office and having console, a cart, a portable shelter, a medical device base and a portable workshop.

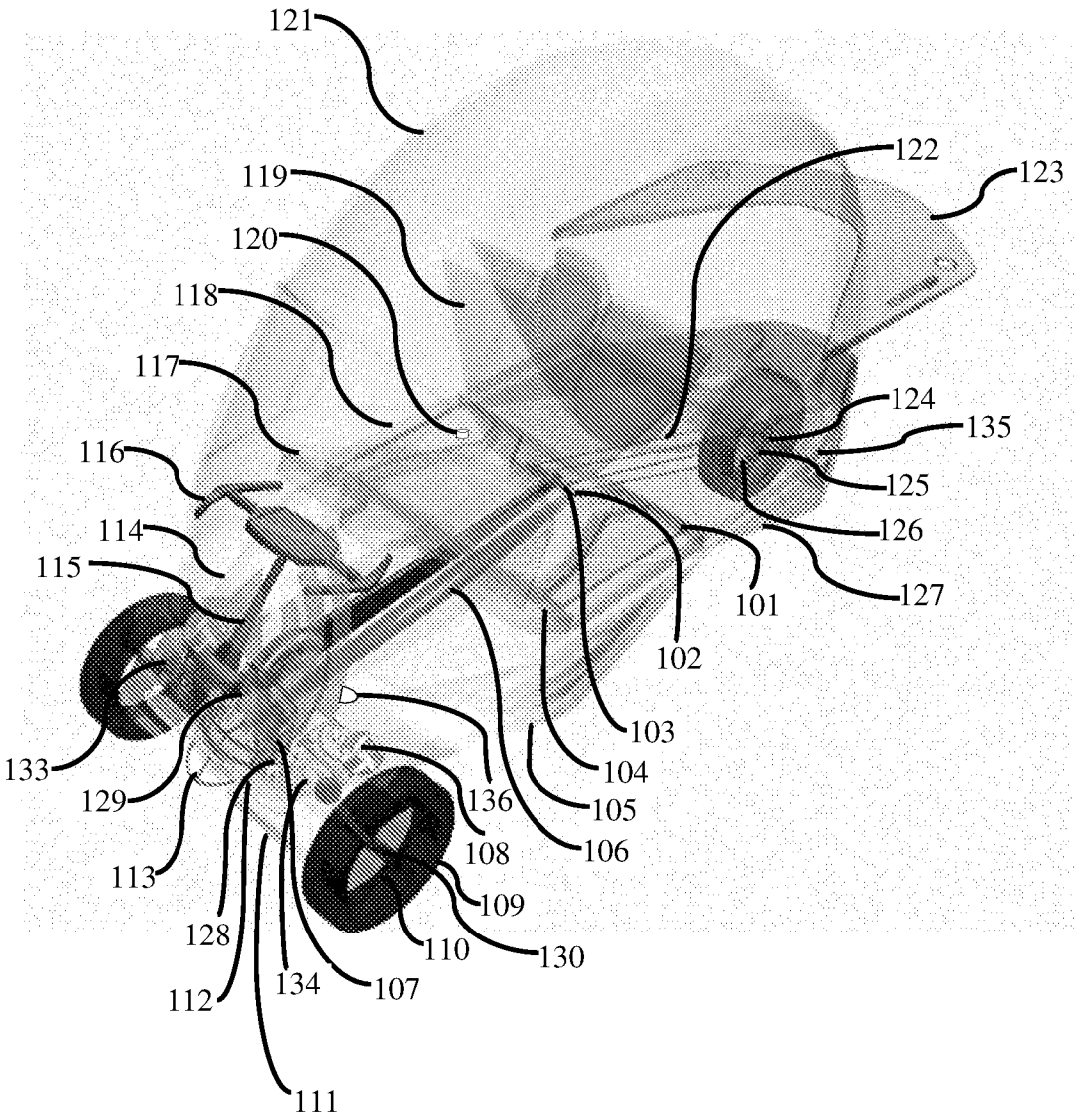
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FIG. 1

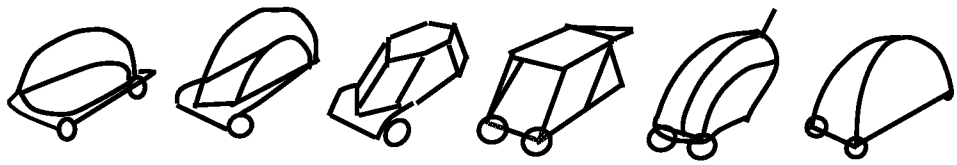

FIG. 2A

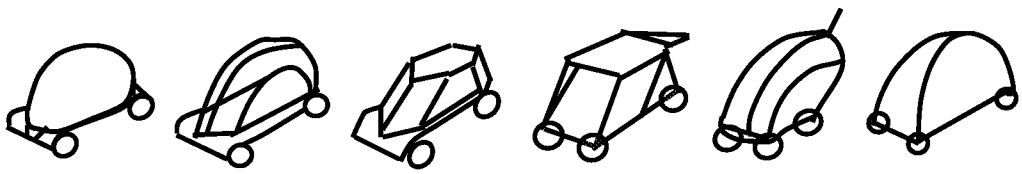

FIG. 2B

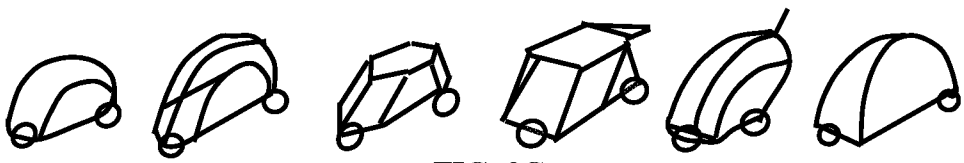

FIG. 2C

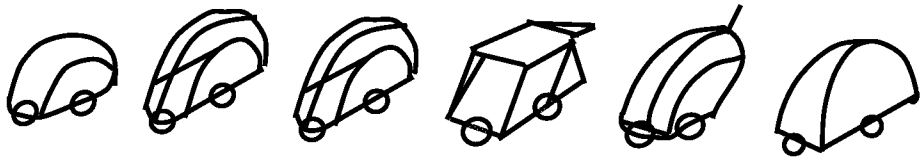

FIG. 2D

FIG. 3a

FIG. 3b

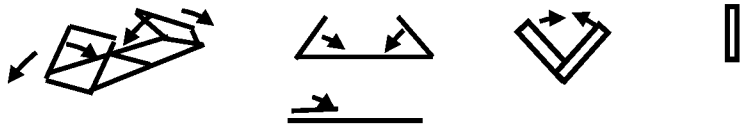

FIG. 3c

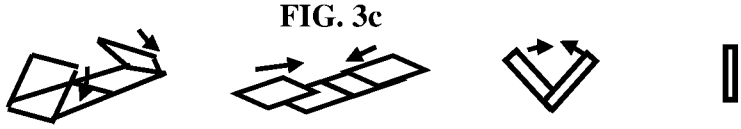

FIG. 3d

FIG. 3e

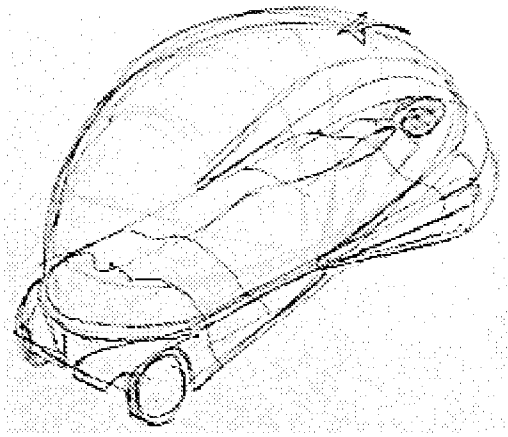

FIG. 4

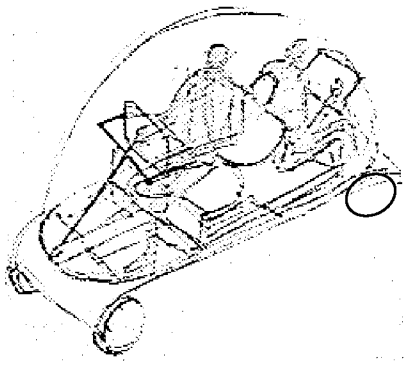

FIG. 5

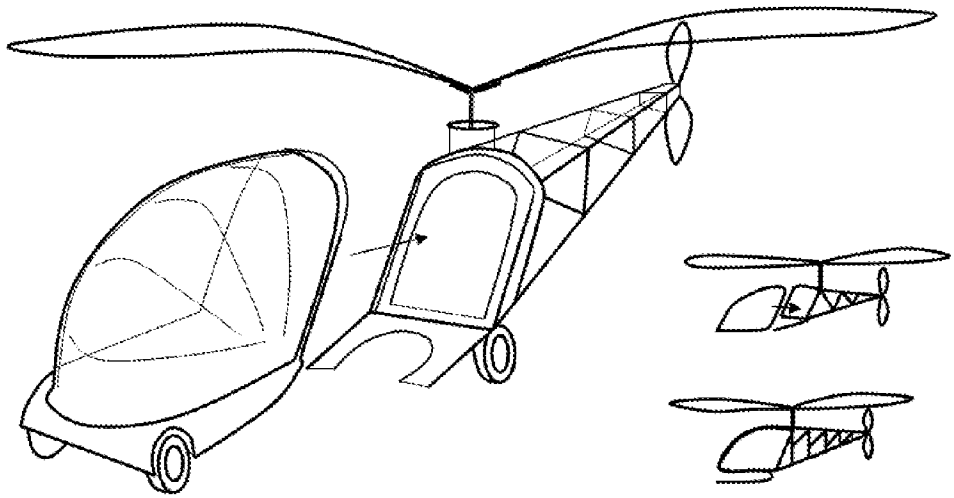

FIG. 6

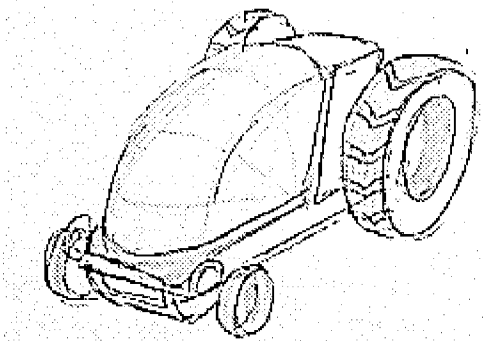

FIG. 7

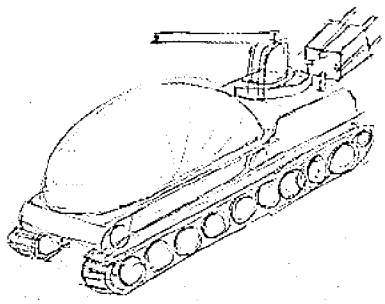

FIG. 8

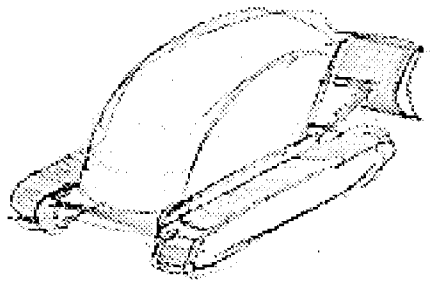

FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2015/057476

A. CLASSIFICATION OF SUBJECT MATTER
B60P3/42 Version=2016.01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B60P3/42

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Ipo internal database

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 20100139383 A1 (GEOFF HASWELL, PAUL CLARKE, MANUJ GUPTA,PAUL HOLDSWORTH, GARY PFEFFER) 10 June 2010 WHOLE DOCUMENT,ABSTRACT,FIGURES-01-06	1-10
Y	US 20090088939 A1 (KWAN WAI TO, LAP-WAI LYDIA LEUNG, ZIYANG GAO, MAN LUNG SHAM, CHANG HWA CHUNG) 2 April 2009 WHOLE DOCUMENT,ABSTRACT,FIGURES-01-04	1-10

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28-04-2016	28-04-2016
Name and mailing address of the ISA/ Indian Patent Office Plot No.32, Sector 14,Dwarka,New Delhi-110075 Facsimile No.	Authorized officer Rakesh Kumar Singh Telephone No. +91-1125300200

International application No.
PCT/IB2015/057476

Citation	Pub.Date	Family	Pub.Date
US 20100139383 A1	10-06-2010	EG 2091761 A1	26-08-2009
		WO 2008059283 A1	22-05-2008
US 20090088939 A1	02-04-2009	US 7860634 B2	28-12-2010