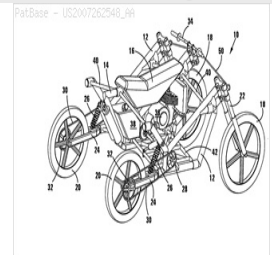


**1) Family number: 31844866** (US2007262548A)**LATERALLY-LEANING FOUR WHEELED VEHICLE**

**Abstract:** Source: US2007262548A This invention relates to wheeled vehicles and particularly to motorised road vehicles. The wheeled vehicle (10) includes two frames (12) for carrying road wheels (18, 20), the frames (12) being laterally spaced apart. A pair of road wheels (18, 20) are mounted on each frame (12) for supporting that frame (12) on the ground, the wheels (18, 20) of each pair being mounted for rotation about operatively more or less horizontal rotational axes which are spaced apart along the associated frame (12). A motor (36) is connected by a drive train (48, 28, 30, 32) to a rear wheel (20) on each of the wheeled frames (12). The wheeled frames (12) are connected together for synchronous tilting relative to the vertical, so that the camber angles of all the wheels (18, 20) change in response to lateral tilting of the frames (12).

**Probable Assignee:** RODNEY RAWLINSON

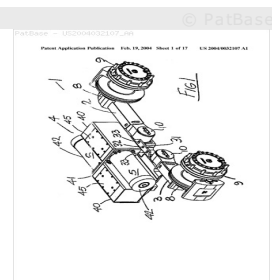
**Earliest Publication Date:** 20050428

**2) Family number: 29610088** (US2004032107A)**TRAILING ARM SUSPENSION ASSEMBLY**

**Abstract:** Source: US2004032107A A suspension assembly has a pair of suspension arms, namely a forward suspension arm and a rear suspension arm. Each suspension arm is pivotally mounted on a housing containing spring means associated with each of the suspension arms. A wheel hub assembly is mounted at an outer end of each suspension arm. An inner end of each suspension arm is connected by a pivot shaft with a lower end of an associated lever arm mounted within the housing. An upper end of the lever arm is connected to the spring means. The spring means opposes pivotal movement of the suspension arm away from a neutral position. Mounting flanges on the housing allow the assembly to be bolted to a floor of a vehicle and adjusted for correct alignment on the vehicle.

**Probable Assignee:** TECHNOLOGY INVESTMENTS LTD

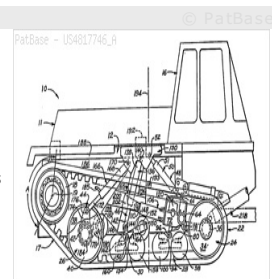
**Earliest Publication Date:** 20031203

**3) Family number: 3094408** (US4817746A)**SUSPENSION MECHANISM FOR A TRACK-TYPE VEHICLE**

**Abstract:** Source: US4817746A A track-type vehicle capable of high speed operation over rough terrain includes a frame supported by lefthand and righthand suspension mechanisms individually having a plurality of hydropneumatically actuated struts for supporting the frame on a plurality of wheels. An elastomeric drive belt is entrained about these wheels and is frictionally driven by an elevated drive wheel. Forces from several struts are directed into the frame in a centralized common region which minimizes rocking of the vehicle. A front idler wheel is urged forwardly and downwardly against the drive belt by a hydropneumatically actuated recoil mechanism, and a front strut also acts on the front idler wheel to resiliently urge it downwardly. A plurality of pivoting members are cooperatively connected to the struts to more evenly distribute forces against the drive belt.

**Probable Assignee:** CATERPILLAR INC

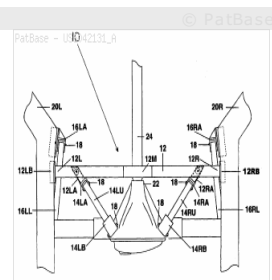
**Earliest Publication Date:** 19890404

**4) Family number: 12152289** (US6042131A)**VEHICLE REAR SUSPENSION SYSTEM**

**Abstract:** Source: US6042131A A vehicle rear suspension system comprises a cross member having pivot mounts extending rearwardly and inwardly therefrom and mounting plates connected to respective vehicle frame members. A left cross member portion is aligned with a right cross member portion, and a middle cross member portion is located above the left and right portions. Left and right upper control arms have front ends pivotally connected to adjustable front box receivers and rear ends pivotally connected to a differential housing. Each front box receiver is fixed to a respective one of the pivot mounts and has a plurality of adjustment openings for adjusting mounting points of the front ends of the upper control arms. Left and right lower control arms have front ends pivotally connected to front box receivers and rear ends pivotally connected to respective axle tubes extending from the differential housing. The front box receivers for the lower control arms are fixed to respective ones of the frame members on an inboard side thereof such that the front ends of the lower control arms are closer to a vehicle centerline than the rear ends of the lower control arms.

**Probable Assignee:** BAILEY JOSEPH ALLEN

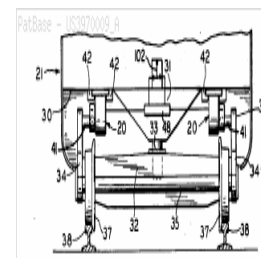
**Earliest Publication Date:** 20000328

**5) Family number: 1304725** (US3970009A)**FLUID RAILROAD PASSENGER CAR SUSPENSION**

**Abstract:** Source: US3970009A A railroad passenger car suspension system in which a car body is supported on trucks in the running mode through rotary hydraulic actuators. All of the necessary conditions for passenger comfort, increased train speed and safety are met. The level of centrifugal force at curves is sensed and the car tilted so that the direction of force is felt by the passengers in a comfortable manner. Flush floor level of the car with station platforms, regardless of passenger load, wheel wear or platform level is attained. Lowered spring rate in the suspension system provides improved ride characteristics. Means are provided for steering the car trucks.

**Probable Assignee:** VIBRATECH INC

**Earliest Publication Date:** 19760720



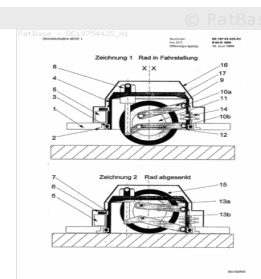
**6) Family number:** 13670274 (DE19754425A1)

#### WHEEL SUSPENSION FOR VEHICLES

**Abstract:** Source: DE19754425A1 The whole functional unit is assembled as a modular wheelset (18) and is installed in a recess in the floor (1) of the vehicle. For the purposes of maintenance and repair the wheelset can be withdrawn sideways, or upwards or downwards from the floor of the vehicle. A support ring (2) is attached in the vehicle floor and in it, by means of a bearing (3), is mounted an inner ring (4) which is rotatable around a vertical axis (X-X). One or more steering motors (5) are attached on the inner ring and through a pinion or other transmission element engage with a ring gear to rotate the inner ring and steer the wheelset.

**Probable Assignee:** ROSENKRANZ VOLKER H

**Earliest Publication Date:** 19990610



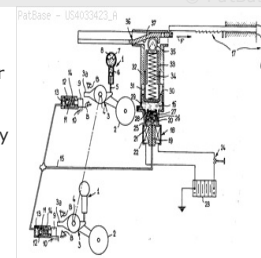
**7) Family number:** 1413191 (US4033423A)

#### HYDRAULIC HEIGHT-ADJUSTMENT VEHICLE SUSPENSION

**Abstract:** Source: US4033423A Hydraulic height-adjustment vehicle suspension system includes an arrangement for blocking up the suspension and adapted to prevent the collapsing thereof when the vehicle is kept stationary for a prolonged time period. The blocking arrangement includes a buffer member retractable and engageable in the fashion of a chock or the like, between a movable member of the suspension system and a fixed portion of the body or chassis of the vehicle. Preferably, a control for each buffer member includes a hydraulic receiver operating against the force of a return spring urging the buffer member to its retracted position, and a hydraulic chamber is provided which communicates with the receivers and is urged to its hydraulic fluid delivering condition by the actuation of the hand brake control of the vehicle to its brake applying position.

**Probable Assignee:** CITROEN SA

**Earliest Publication Date:** 19760526

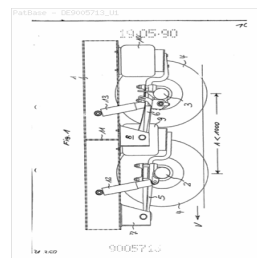


**Abstract:** Source: DE9005713U1 (Claim 1) 1. Fahrwerk fuer Anhaenger oder Dollys mit zwei starren Achsen (2,3), die beide mittels an vorderen Konsolen (7,8) angelenkten Lenkerfedern (5,6) und an den rueckwaertigen Ender angeordneten Luftfederbaelgen (9,10) am Fahrzeugrahmen (1) oder einer Traegerplatte abgestuetzt sind, d gekennzeichnet, dass die Lenkerfedern (6) der hinteren Achse (3) zwischen ihren vorderen Konsolen (8) und der Achse nach aussen abge- kroepft sind und dass die vorderen Konsolen (8) der hinteren Achse (3) zwischen den Luftfederbaelgen (9) der vorderen Achse (2) angeordnet sind.

**Machine translation:** (Claim 1) 1 Chassis for trailer or dolly with two rigid axles (2.3), both through to the front console (7.8) hinged trailing arms (5.6) and finished at the rear mounted air bags (9.10) on the vehicle frame (1) or Traegerplatte are supported, d indicated that the trailing arms (6) of the rear axle (3) between their front consoles (8) and the axis to the outside are cranked completed and that the front console (8) of the rear axle (3) are arranged between the air bags (9) of the front axle (2).

**Probable Assignee:** BERGISCHE ACHSENFABRIK FR KOTZ AND SOEHNE 5276 WIEHL DE

**Earliest Publication Date:** 19900906



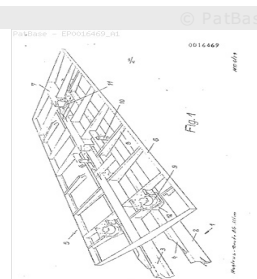
# 11) Family number: 1783941 (EP0016469A1)

## DEVICE FOR RESILIENTLY SUPPORTING A TORSIONALLY RIGID SUPERSTRUCTURE ON A TORSIONALLY YIELDABLE CHASSIS FRAME OF LOAD-CARRYING VEHICLES.

**Abstract:** 1. A system for resiliently supporting a torsionally rigid superstructure, for example a platform body, on a torsionally yielding chassis frame (1) of a motor vehicle by means of two pairs (9 and 10) of elastic supports, the supports of each pair being arranged transversely to and symmetrically about the vehicle's longitudinal central axis; and a single universally elastic support (11) disposed in the area of the superstructure's end portion at the longitudinal central axis, characterized in that one pair (9) of the supports, which are hard-sprung in the direction of compressive loads but soft-sprung in the direction of tensile loads and the spring travel of each of which - in the latter direction - is a long one, is arranged at the front end portion of the platform body (bottom 5 of the body), in that the other pair (10) of the supports is arranged in the region of the rear axle and the single support (11) at the rear end portion of the frame (1), in that the frame (1) is held by the other pair (10) of the supports so as to be freely movable in horizontal plane in relation to the platform body, and in that longitudinal and transverse forces are transmissible only by the front and rear supports (9 and 11) and vertical forces by all the supports (9 to 11).

**Probable Assignee:** IVECO MAGIRUS AKTIENGESELLSCHAFT

**Earliest Publication Date:** 19801001



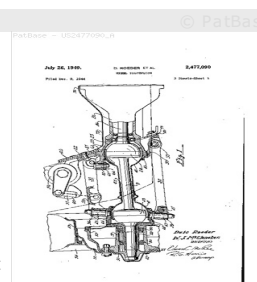
# 12) Family number: 19707114 (US2477090A)

## WHEEL SUSPENSION

**Abstract:** Source: GB604958A [Classes 79 (ii), 79 (iv) and 79 (v)] [Also in Group XXXII] In a front wheel suspension for an armoured vehicle (see Group XXXII) the wheel 54 is carried on a stub axle assembly, Fig. 1, having an arm 70, Fig. 3, universally jointed to a link 69 which is also universally jointed to a lever arm 66 fulcrummed at a point 67 on a sprung part of the vehicle. The lever arm 66 is connected at its outer end to a track rod 65 connected by a drag link 62 to a spindle not shown, which passes through a waterproofed aperture in the floor of the driver's compartment and is connected by the usual worm gear to the steering wheel. The wheel 54 is driven from a differential shaft 46, Fig. 1, through a universal coupling 24, intermediate shaft 71. The latter is connected to a second universal coupling 48 which drives a spindle 45 contained in the stub axle 49 which is connected with the wheel by a driving flange 50. The differential housing 26 is supported solely by its connections at each end at 25 to a plate 22 which is secured to the body sides and which provides the attachment points for the suspension.

**Probable Assignee:** FORD MOTOR CO

**Earliest Publication Date:** 19480713



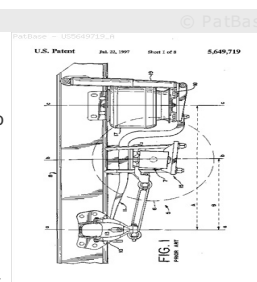
# 13) Family number: 20502412 (US5649719A)

## LINKAGE SUSPENSION SYSTEM

**Abstract:** Source: US5649719A A vehicle suspension system particularly useful in the heavy duty truck and trailer industry is disclosed. The suspension features lower control rods that are pivotally connected at their leading ends to hangers attached to each side frame member. The rearward ends of the lower control rods are attached to axle seats, one at each end of the axle, which are connected to the axle of the vehicle. Air springs and shock absorbers or, alternatively, hydraulic cylinders with accumulators, are mounted between each axle seat and each side frame member. The lower control rods are in an inclined orientation with their forward ends above their trailing ends. Additionally, some embodiments of the suspension feature upper control rods with their forward ends pivotally attached to the two opposing truck side frame members. The rearward ends of the upper control rods are attached to the top center of the axle by either a bolt and bushing mount or a ball and socket mount so that the upper control rods form a "V". The upper control rods lay in a nearly horizontal plane. As an alternative to the "V" configuration of the upper control rods, a single, nearly horizontal, longitudinal upper control rod mounted between the centers of the frame cross member and the vehicle axle may be used in conjunction with either a control rod or a Watt linkage transverse to the side frame members. The suspension eliminates the heavy and costly Z-springs commonly used in air or hydraulic suspensions. The suspension has a lower frequency and is not torque reactive. Both of these features reduce vibration and provide for a better vehicle ride. The suspension also offers improved vehicle traction.

**Probable Assignee:** HENDRICKSON USA LLC

**Earliest Publication Date:** 19970722



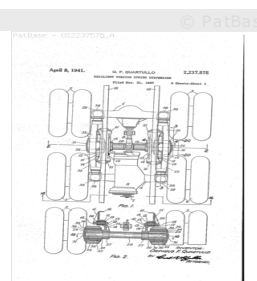
# 14) Family number: 21512108 (US2237575A)

## RESILIENT TORSION SPRING SUSPENSION

**Abstract:** Source: US2237575A 1. In combination, a vehicle frame comprising trunnion elements at each side thereof, a pair of rigid beams oscillatorily mounted 'intermediately of their ends on remote ends ct said trunnion elements, said beams having bores enveloping said trunnion elements in spaced relation therearound, annular rubber torsion bushings interposed between said beams and trunnion elements and adapted to yield in unison with any deflection strains imparted to ends of said beams and axle structures having a ball and socket connection each with corresponding ends of said beams. ,

**Probable Assignee:** QUARTULLO ORPHEUS F

**Earliest Publication Date:** 19410408



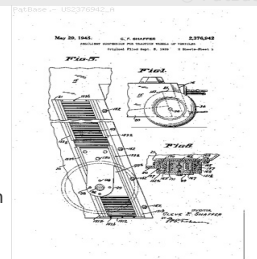
**15) Family number: 21654059** (US2376942A)

## RESILIENT SUSPENSION FOR TRACTION WHEELS OF VEHICLES

**Abstract:** Source: US2376942A 1. A suspension apparatus for supporting a vehicle body relative to traction wheels thereof, comprising a housing for mounting on the vehicle body; means in the housing for selectively raising and lowering the vehicle body relative to the axles of traction wheels and including a pressure cylinder member adapted for receiving a pressure fluid in one end portion thereof, and a piston member reciprocable in the cylinder, one of said members having a supporting connection to the vehicle body, a wheel supporting mechanism slidable in the housing and connected to the other of said members, said wheel supporting mechanism including a cross-block fixedly mounted at the free end of the said other member, a following carrier resiliently connected to and spaced from said block and having means for mounting a traction wheel thereto, and resilient means connecting said block and said carrier whereby said carrier may slide in the housing in unison with and independently of the cross-block, and braking means operated by tensioning of said resilient means for resisting relative movement of block and carrier.

**Probable Assignee:** HERBERT W ERSKINE

**Earliest Publication Date:** 19430427



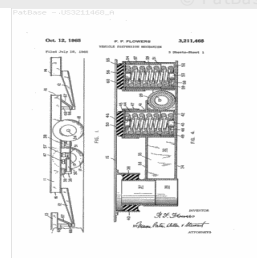
**16) Family number: 22833845** (US3211468A)

## VEHICLE SUSPENSION MECHANISM

**Abstract:** Source: US3211468A (Claim 1) 1. In combination with a vehicle frame, suspension means comprising a tubular axle having a journal bearing at each opposite end, a pair of sleeves each loosely surrounding the axle with their outer ends fastened thereto inwardly of the journal bearing a longitudinally extending arm attached to each sleeve at its opposite end, the front end of each said arm being elastically connected with the vehicle frame, a spring housing on each arm adjacent to the sleeve, and compression springs within the housing supporting the vehicle frame.

**Probable Assignee:** DIFFERENTIAL STEEL CAR CO

**Earliest Publication Date:** 19651012



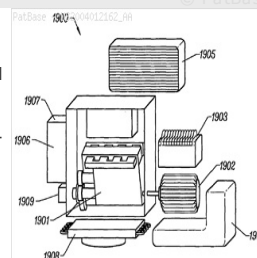
**17) Family number: 23227499** (US2004012162A)

## PLATFORMS FOR SUSTAINABLE TRANSPORTATION

**Abstract:** Source: US2004012162A A vehicle utilize a cellular design to provide variously sized vehicles constructed from varying numbers of substantially identical cells. Each cell, fabricated from lightweight materials including composites, includes: compartment, floor section, sidewalls, roof, drive train, steering, brakes; and wheels coupled through axles and independent suspensions to the vehicle body, each suspension including a height adjuster, a flow-control shock absorber, and a rapid-response air spring for and exceptionally comfortable ride. The suspension system reduces structural requirements for the body. All-wheel steering lends the vehicle exceptionally high maneuverability. A hybrid power system combines an alternative fueled engine to power electricity generation and all-wheel electric drive with main energy storage in advanced battery technology. The cellular design and attendant weight reduction allow suspensions and drive trains to be substantially fabricated from light truck parts. A control system coordinates and regulates the several sub-systems based on a variety of inputs.

**Probable Assignee:** ITS BUS INC

**Earliest Publication Date:** 20020404



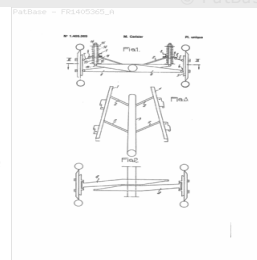
**18) Family number: 23887349** (FR1405365A)

## SUSPENSION A BALANCIERS ET A RATTRAPAGE AUTOMATIQUE DE STABILITE, NOTAMMENT POUR VEHICULE AUTOMOBILE SUSPENSION ROCKERS AND RETROFIT AUTOMATIC STABILITY, PARTICULARLY FOR MOTOR VEHICLE (MACHINE TRANSLATION)

**Abstract:** Source: FR1405365A (Claim 1) 1 La suspension est constituée par quatre balanciers transversaux montés pivotants dans leur zone sensiblement médiane sur des portées qui présentent cet effet le véhicule, chaque balancier étant articulé à ses extrémités disposées de part et d'autre de la portée correspondante, d'une part, à la roue correspondante et, d'autre part, à un axe vertical engagé dans une platine rigide solidaire du véhicule et qui forme un élément d'appui commun pour deux ressorts hélicoïdaux à hélices inverses montées concentriquement à l'axe pour travailler en opposition de chaque côté de ladite platine.

**Machine translation:** (Claim 1) 1 The suspension is constituted by four transverse mounted swivel in their area median significantly on litters that present the vehicle for this purpose, each arm being articulated. It has its ends disposed on either side of the corresponding bearing has, on the one hand, to the corresponding wheel and, on the other hand, has a vertical axis engages in a rigid plate integral with the vehicle. It forms an element common support for two helical springs a reverse propellers mounted concentrically to the axis to work opposed them on each side of said plate.

**Earliest Publication Date:** 19650709



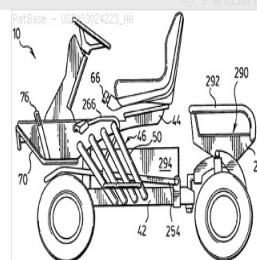
**19) Family number: 27991437** (US2003024223A)

## ELECTRIC VEHICLE AND REEL MOWER GANG

**Abstract:** Source: US2003024223A A novel construction for a body for a vehicle in which two elongate decks are provided supported in alignment one on top of the other and spaced from each other with rib members extending from each side of the decks outwardly to the side joining the sides of the decks and defining a cavity between the decks and inside the rib members. The ribs are preferably tubular members for strength but reduced weight.

**Probable Assignee:** SNOWBEAR LTD

**Earliest Publication Date:** 20030113



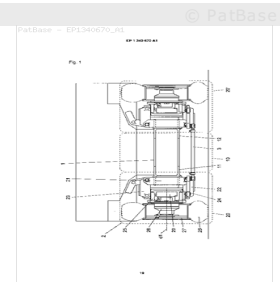
**20) Family number: 28937211** (EP1340670A1)

#### INDEPENDENT WHEEL MODULE AND VEHICLE USING SUCH A MODULE

**Abstract:** The wheeled module (2), designed to support all or part of a chassis (1) of a load transporting or handling vehicle, has at least one wheel attached to a coupling mechanism within a volume (20) that does not extend as far as the centre of the chassis and provides a suspension system that is independent of the wheel's position or configuration. The wheel is pivoted on a journal (25) that can be rotated about a vertical axis by a steering rod, the journal being connected to the chassis by a flexible suspension system.

**Probable Assignee:** TECHNI MATAL ENTPR

**Earliest Publication Date:** 20030829



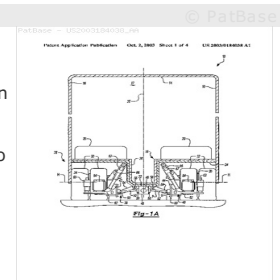
**21) Family number: 29059955** (US2003184038A)

#### SEMI-INDEPENDENT SWING ARM SUSPENSION SYSTEM FOR A LOW FLOOR VEHICLE

**Abstract:** Source: US2003184038A A suspension system for a low floor vehicle includes an independent suspension system which includes a spring strut of the McPherson type. The spring strut essentially combines a spring and shock into a load bearing member of the suspension. The spring strut is mounted to the hub support structure and the top of each wheel box. An input gear box such as a differential is mounted to the vehicle underside or directly to a hub gear box.

**Probable Assignee:** MERITOR HEAVY VEHICLE TECHNOLOGY LLC

**Earliest Publication Date:** 20031001



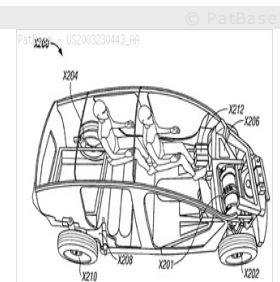
**22) Family number: 29906346** (US2003230443A)

#### ADVANCED COMPOSITE HYBRID-ELECTRIC VEHICLE

**Abstract:** Source: US2003230443A An advanced composite hybrid-electric vehicle including one or more of lightweight, advanced composite structures, modular rear suspension and traction motor units, fuel-cell hybrid-electric powertrains, integrated electromagnetic and pneumatic suspension systems, and a digital network-based control system and information management architecture that uses a fault tolerant ring main power supply.

**Probable Assignee:** FIBERFORGE CORP

**Earliest Publication Date:** 20030717



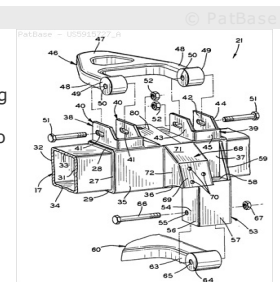
**23) Family number: 30535793** (US5915727A)

#### MOUNTING STRUCTURE FOR VEHICLE FRAME ASSEMBLY

**Abstract:** Source: US5915727A A mounting structure is adapted for use in a vehicle frame assembly. The mounting structure is formed as a one-piece body. Preferably the body is formed of cast aluminum alloy. The body includes a recess having a C-shaped cross section for disposing the mounting structure about a vehicle side rail. The body also includes a plurality of mounts for securing vehicle components to the mounting structure.

**Probable Assignee:** METALSA S A DE CV

**Earliest Publication Date:** 19971130



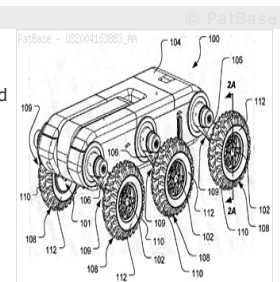
**24) Family number: 30826715** (US2004163863A)

#### HUB DRIVE AND METHOD OF USING SAME

**Abstract:** Source: US2004163863A A hub drive includes an in-hub motor and a shifting in-hub transmission coupled with the motor. A hub drive wheel assembly includes a wheel comprising a hub, an in-hub motor, and a shifting in-hub transmission having an input attached to the motor and an output attached to the wheel. A vehicle includes a chassis, a wheel comprising a hub, an in-hub motor, and a shifting in-hub transmission having an input attached to the motor and an output attached to the wheel for rotating the wheel with respect to the chassis. A method includes providing a shifting transmission and a motor coupled with the transmission in a hub of a wheel, providing electrical power to the motor, and rotating the motor with the electrical power. The method further includes rotating the transmission with the motor and rotating the wheel with the transmission.

**Probable Assignee:** LOCKHEED MARTIN CORP

**Earliest Publication Date:** 20040826



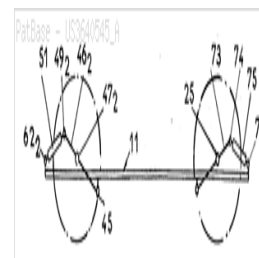
**25) Family number: 30920932** (US3640545A)

#### AUTOMOBILE VEHICLE

**Abstract:** Source: US3640545A Automobile vehicle construction having a body coupled to wheels, preferably three in number, by a suspension system comprising levers rotatably mounted about the wheel axles, and members of rubberlike elasticity, acting longitudinally, the points of attachment to the body being such that the deformation of the members is substantially greater than the corresponding movement of the body.

**Probable Assignee:** CITROEN ARMAND FR

**Earliest Publication Date:** 19700402



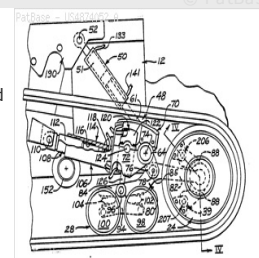
**26) Family number:** 3094431 (US4874052A)

### SUSPENSION SYSTEM FOR A VEHICLE

**Abstract:** Source: US4874052A A suspension system for the idlers and guide wheels, and related structures, of a belted track-type vehicle provides cushioning for the vehicle and components as the vehicle traverses obstacles and uneven terrain. The suspension system also provides tensioning and recoil for the endless track belt during ingestion of foreign material between the belt and the idler wheel. The suspension system includes a plurality of hydropneumatic struts connected between the vehicle frame and various belt guiding and supporting components. Most endless track machines utilize auxiliary frame assemblies on each side of the main vehicle frame to support track guiding rollers, idler wheels, suspension systems, and track recoil mechanisms. These auxiliary frame assemblies are bulky, heavy, and complicated and generally limit the total amount of suspension and recoil afforded to the idler wheels and track guide wheels. The subject suspension system is void of any auxiliary track frames and connects all of the suspension and recoil struts directly to the main frame. This provides considerable amount of travel for the recoil and suspension struts and provides high speed capabilities for the vehicle. Additional, the subject suspension includes a controllable lock-out of a cushion cylinder to provide a stable work platform during certain work functions of the vehicle.

**Probable Assignee:** CATERPILLAR INC

**Earliest Publication Date:** 19890629



**27) Family number:** 311353 (DE1580327A1)

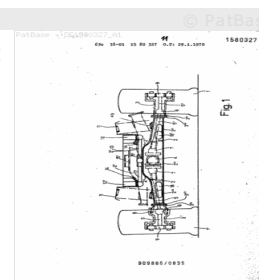
### STARRACHSANORDNUNG, INSBESONDERE FUER SCHWERE GELAENDEGAENGIGE KRAFTFAHRZEUGE STARRACHSANORDNUNG, ESPECIALLY FOR HEAVY PASSENGER MOTOR VEHICLES (MACHINE TRANSLATION)

**Abstract:** Source: DE1580327A1 (Claim 1) 1. Starrachsanordnung, insbesondere fuer schwere gelaendegaengige Kraftfahrzeuge, mit angetriebenen Raedern und seitlich. angeordneten Federelementen zur Federung der Starrachge, gekennzeichnet durch ein Achsgehaeuse, das aus einem Achsgehaeuse mittelteil (2) und den beiden Achsgehaeuse aussenteilen (3, 3t) besteht, wobei das Achsgehaeuse mittelteil (2) zur Aufnahme eines zur horizontalen Radaahsmittlebenenach oben versetzt angeordneten Achsverteilergetriebes (4) im mittleren Bereich symmetrisch zur senkrechten Fahrzeuglaengsmittlebene mit einem topfartig nach oben herausragenden, zwischen den Rahmenlaengs traegern (12, 12t) des Fahrzeuges bei Vertikalschwingungen: sich einfügendefi abgeflachten Haubenteil (2t) ausgestattet ist und seitlich zur Aufnahme der nach unten geneigten zu dtv koaxialen Raaenabengetriebenen verlaufenden Seitenwellen (5, 59 zu den Achsgehaeuse aussenteilen (3, 3t) sich erstreckt und dass der Bodenteil (21t) des Achsgehaeuse fittelteils (2) waagrecht ebenflaechig gestaeltet ist.

**Machine translation:** (Claim 1) 1 Starrachsanordnung, especially for heavy Passenger motor vehicles, having driven wheels and suspension elements arranged seitlich. ange for suspension of Starrachge, marked by an axle housing, the middle part of an axle housing (2) and the two Achsgehaeuse aussenteilen (3, 3t) .., wherein the Achsgehaeuse mittelteil (2) for receiving one for horizontal Radaahsmittlebenenach above staggered Achsverteilergetriebes (4) in the central area of platform symmetrically to the vertical Fahrzeuglaengsmittlebene with a cup-shaped top protruding between the Rahmenlaengs (12, 12t) of the vehicle in vertical oscillations: the einfügendefi flattened hood part (2t) is equipped and laterally to accommodate the tilted untenf to DTV coaxial Raaenabengetriebenen running side shafts (5, 59, on the Achsgehaeuse aussenteilen (3, 3t) covers and that the bottom part (21t) of Achsgehaeuse fittelteils (2) horizontal Warpage is gestaeltet.

**Probable Assignee:** MASCHF AUGSBURG NUERNBERG AG

**Earliest Publication Date:** 19700129



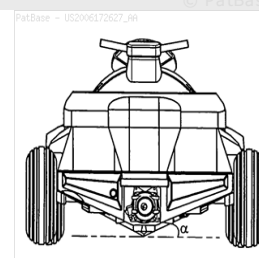
**28) Family number:** 31419540 (US2006172627A)

### AMPHIBIOUS VEHICLE

**Abstract:** Source: US2006172627A A planing amphibious vehicle with retractable wheels and a sit-astride seat having dimensions that impart enhanced capability in both land as well as water modes of operation. The beam, track, dead rise angle and the location of the handlebars cooperate to enhance freeboard and ground clearance without sacrificing manoeuvrability. The length is at least 2400 mm; the beam is at least 1250 mm; the deadrise angle at least 10 degrees; and the handlebars are located only slightly forward of the halfway distance from transom to bow.

**Probable Assignee:** GIBBS TECHNOLOGIES LTD

**Earliest Publication Date:** 20060426



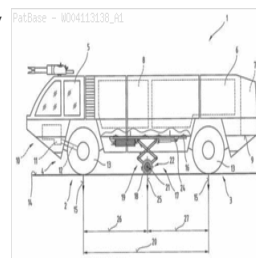
**29) Family number:** 31424124 (WO04113138A1)

### SUPPORTING DEVICE FOR A MOTOR VEHICLE

**Abstract:** The invention relates to a supporting device (17) for a motor vehicle (1), especially a fire engine, military vehicle, or police vehicle, comprising at least one supporting mechanism (19) that is adjustable by means of an adjusting drive unit (24), can be fixed to a chassis frame (9) so as to face a contact surface (14) of the vehicle (1) tires, and is provided with at least one support wheel (18). Said supporting mechanism (19) is formed by a multijoint lever arrangement (23) which is pivotally or adjustably mounted on a supporting profile (29) via basic levers (3 6). An actuating device for a supporting force of the support wheel (18), which acts in a direction extending approximately vertical to the contact surface (14) of the vehicle (1) tires, is associated with at least one basic lever (36) of the multijoint lever arrangement (23).

**Probable Assignee:** ROSENBAUER INT AG

**Earliest Publication Date:** 20041229



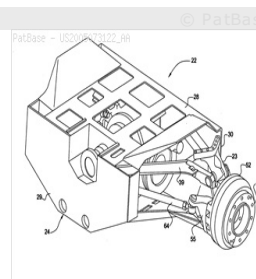
**30) Family number: 31797899** (US2005073122A)

### WHEEL UNIT FOR AUTOMOTIVE VEHICLES

**Abstract:** Source: US2005073122A A wheel assembly for a vehicle having a body, a power plant and a drivetrain for transmitting drive to said wheel assembly, generally consisting of a wheel including rim and hub portions; a roller bearing having inner and outer races, disposed within the rim portion of the wheels, coaxially therewith; first support means having a steering axis, mounted on the outer race of the bearing connectable to the body; second support means mounted to the inner race of the bearing and rigidly secured to the hub portion of the wheel; and an axle operatively connected at an inner end thereof to a portion of the drivetrain and an outer end extending into the inner race of the bearing and connected by means of a single universal joint to one of the second support means and the hub portion of the vehicle; wherein the steering axis intersects the center of the single universal joint.

**Probable Assignee:** GENERAL PURPOSE VEHICLES INC

**Earliest Publication Date:** 20050407



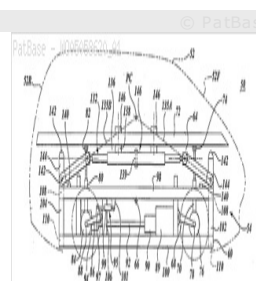
**31) Family number: 32026859** (WO05058620A1)

### VEHICLE WITH MOVABLE AND INWARDLY TILTING SAFETY BODY

**Abstract:** A suspension system for a vehicle (50c) having a body (52c) and a plurality of wheel support assemblies (50c) includes a tie structure (60c) interposed between the body and the wheel support assemblies. A first interconnection system (68c) interconnects the tie structure to the wheel support assemblies, and the second interconnection system (302) interconnects the tie structure and the body. The second interconnection system includes a plurality of link structures (304, 320) pivotally connected at one end to the tie structure, and pivotally connected at the opposite end to the body. Such link structures are oriented relative to the tie structure to extend towards a common point along a longitudinal axis (33b) of the tie structure.

**Probable Assignee:** MACISAAC WILLIAM

**Earliest Publication Date:** 20050630



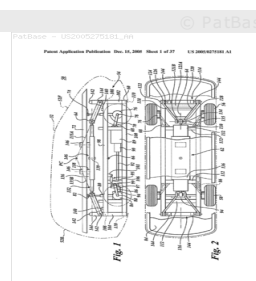
**32) Family number: 32484600** (US2005275181A)

### VEHICLE WITH MOVABLE AND INWARDLY TILTING SAFETY BODY

**Abstract:** Source: US2005275181A A suspension system for a vehicle (50c) having a body (52c) and a plurality of wheel support assemblies (56c, 58c) includes a tie structure (60c) interposed between the body and the wheel support assemblies. A first interconnection system (68c) interconnects the tie structure to the wheel support assemblies, and the second interconnection system (302) interconnects the tie structure and the body. The second interconnection system includes a plurality of link structures (304, 320) pivotally connected at one end to the tie structure, and pivotally connected at the opposite end to the body. Such link structures are oriented relative to the tie structure to extend towards a common point along a longitudinal axis (33B) of the tie structure.

**Probable Assignee:** MACISAAC WILLIAM L

**Earliest Publication Date:** 20051215



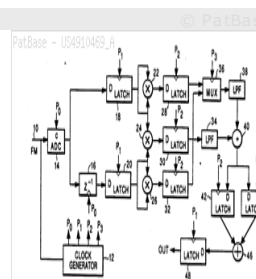
**33) Family number: 3312574** (US4910469A)

### DEMOMULATOR FOR SAMPLED DATA FM SIGNALS

**Abstract:** Source: US4910469A A sampled data FM demodulator samples the FM signal at intervals of  $(2n\pi + \pi/2)$  radians relative to the FM carrier. Pairs of samples  $S_n$  and  $S_{n+1}$  are square and multiplied together to generate sample values  $S_{n2}$ ,  $S_{n+12}$  and  $S_n S_{n+1}$ . These sample values are lowpass filtered in a filter having a cutoff frequency which substantially attenuates at least the second harmonic of the FM carrier. The low pass filtered samples are then combined according to the relation  $S_n S_{n+1} / 2\sqrt{2} S_{n2} S_{n+12}$  to generate demodulated output samples.

**Probable Assignee:** RCA LICENSING CORP

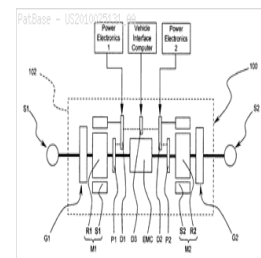
**Earliest Publication Date:** 19900320



**34) Family number: 40490081** (US2010025131A)

### ELECTRIC PROPULSION SYSTEM

**Abstract:** Source: US2010025131A The present invention relates to a motive power device for a vehicle, which is preferably retrofittable as front or rear axle. In a first embodiment, the device comprises a chassis (301) supporting at least one electric motor (318) and attached to the vehicle suspension fixtures with mounts (302, 304). Wheel hubs (377) are suspended from the chassis (301) and driven by the at least one motor (318). Further independent claims are included for a motive power device having a controller providing launch assist and/or stability control, a motive power device having at least two motors and a clutch therebetween, a vehicle provided with these various motive power devices, a method of making a vehicle, a clutch per se and an acceleration controller.

**Earliest Publication Date:** 20071018

## SUSPENSION SYSTEM WITH PARALLELOGRAM AXLE STABILIZATION AND CENTRAL ELASTOMER SPRING

54445707

**Earliest Publication Date:** 19840501

## VEHICLE SUSPENSION FOR ROUGH TERRAIN

**Earliest Publication Date:** 19840814

## ELECTRIC MOTOR VEHICLE

**Earliest Publication Date:** 19810311

## WHEEL SUSPENSION FOR LOWERABLE VEHICLE BODIES

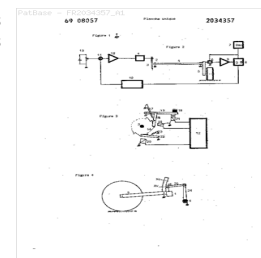
**Earliest Publication Date:** 19880505

**Abstract:** Source: FR2034357A (Claim 1) 1-La suspension classique de vehicules par des ressorts a ancrages fixes rend la hauteur du vehicule dependante de la charge. La presente invention vise a remplacer un des ancrages fixes par un ancramobile sous reaction d'un moteur. La variation de hauteur du chassis qui en resulte est controle par un capteur. La sortie du capteur est comparee a une reference et l'erreur commande le moteur. L'ensemble est coordonne suivant la theorie generale des servomecanismes.

**Machine translation:** (Claim 1), a classic vehicle suspension springs by a fixed anchors makes the height of the vehicle depends on the load. The present invention aims to replace a fixed anchors ancramobile in a reaction engine. The change in height of the chassis which results is controlled by a sensor. The sensor output is compared with a reference and error controls the motor. The project is coordinated according to the general theory of servomechanisms.

**Probable Assignee:** AYMES ALAIN

**Earliest Publication Date:** 19701211



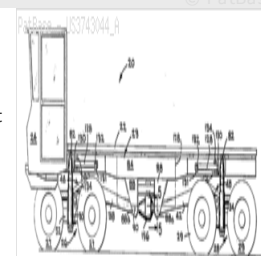
**40) Family number: 7374105 (US3743044A)**

#### ELEVATING PLATFORM TRANSPORTER

**Abstract:** Source: US3743044A An article transport vehicle for loading and unloading cargo aircraft has an elevating article-supporting bed which carries on its underside power means for adjusting the disposition of the bed and power means for motivating the vehicle. The bed is uniquely supported on tandem wheel-carrying axles so that it can be elevated to any desirable level and still be stabilized with respect to vertical, side, or fore and aft loads. The bed also possesses roll and pitch capabilities for use on uneven terrain.

**Probable Assignee:** FMC CORP

**Earliest Publication Date:** 19730703



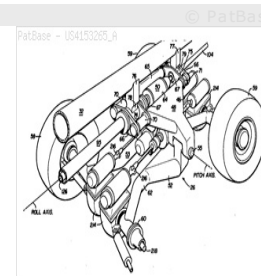
**41) Family number: 7778257 (US4153265A)**

#### OFF-ROAD VEHICLE

**Abstract:** Source: US4153265A A high-mobility wheeled vehicle for transporting long loads over roadless terrain. The vehicle has front and rear quad wheel assemblies pivotally connected to a centrally disposed elongated bed frame so as to permit lateral rotation of these assemblies about the longitudinal axis of the frame. A roll control means interconnects the quad wheel assemblies and the bed frame to proportionately control the relative angular movement. The wheels of each quad wheel assembly are paired together by walking beam members, thus providing a suspension system having balanced load distribution between the wheels over a wide range of terrain roughness conditions. A differential drive system provides a balanced distribution of power to each wheel on both assemblies under all wheel drive conditions. Preferably, each of these wheels is steerable and the steering control means provides for oblique travel in conjunction with conventional steering.

**Probable Assignee:** OI FOREST PRODUCTS STS INC

**Earliest Publication Date:** 19761206



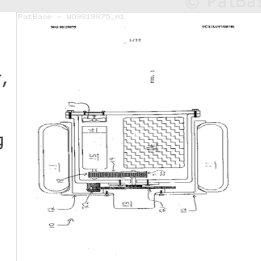
**42) Family number: 8737954 (WO9819875A1)**

#### A MODULAR WHEEL ASSEMBLY

**Abstract:** A self contained powered steerable modular ground wheel assembly has a drive motor, a steering motor, batteries, and computing means fitted in the wheel. An electric vehicle can be fitted with any number of such wheel assemblies which are controlled by a master computer which activates the drive and steering motor in each assembly. The vehicle can thus be steered without any mechanical steering link, and is much more stable by having many of the heavy components in the wheel assembly and thus below the vehicle suspension.

**Probable Assignee:** EZE PTY LTD CORP

**Earliest Publication Date:** 19980514



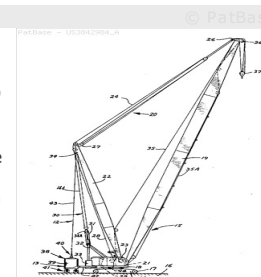
**43) Family number: 1100711 (US3842984A)**

#### CRANE COUNTERBALANCING TRAILER ASSEMBLY

**Abstract:** Source: GB1203920A 1,203,920. Vehicle suspension. AMERICAN HOIST and DERRICK CO. 21 July, 1969 [15 Oct.,1968], No. 36596/69. Heading B7D. [Also in Divisions B8 and E2] A counterweight trailer assembly 38 combined with a crane (see Division B8), comprises a ballast tank 39 supported by two sets of two pairs of wheels 72, 73 and 72A, 73A similarly mounted. Pair 72 is mounted on an axle 76 pivoted on horizontal king pins 81 to yoke 79 on standard 77 arranged to rotate about its vertical axis. A lock assembly 86 (see Division E2-E3) sets the wheels 72 concentric with the crane-slueing axis. The wheel pairs 72, 73 and 72A, 73A are respectively mounted on beams 74, 74A, the former being pivoted about a horizontal axis by a pin 107 to equalize the load on all eight wheels. For towing independently of the crane the wheels 72A, 73A are set parallel to the longitudinal axis of the trailer assembly 38 and the wheels 72, 73 are set parallel and interconnected for steering, Fig. 10 (not shown).

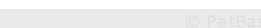
**Probable Assignee:** AMERICAN CRANE A CORP OF NC CORP

**Earliest Publication Date:** 19700416



**44) Family number: 11271103 (DE4313321A1)**

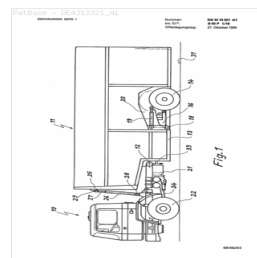
#### LORRY



**Abstract:** Source: DE4313321A1 In the lorry which consists of a tractive unit (10) and a self-bearing platform body (11), the platform body (11) is connected in an articulated way to the tractive unit (10) via a shaft (12). The rear wheels (14, 15) are mounted individually, or by means of a common rear wheel axle, on at least one rocker (16) which is arranged on the frame of the platform body (11), the said rocker (16) being capable of being lifted off from the carriageway by means of a cylinder/piston arrangement (19) which serves simultaneously during driving to provide wheel suspension, as a result of which the rear end (30) of the platform body (11) can be lowered onto the carriageway (31).

**Probable Assignee:** FRIEDER VOLK GMBH AND CO MASCHIN

**Earliest Publication Date:** 19941027



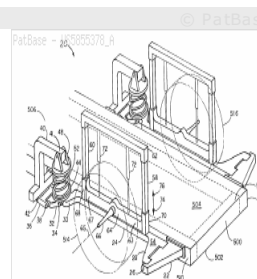
**45) Family number: 11362619** (US5855378A)

#### ELEVATOR SUSPENSION AND METHOD OF USE

**Abstract:** Source: US5855378A A fully independent suspension system (20) for a vehicle includes a plurality of components mounted above the bottom side (502) of the frame (500) of the vehicle so that the rear end (508) of the frame (500) may be selectively lowered to the roadway. In a preferred embodiment, the components are mounted on the longitudinal edges (510) and (512) of the frame (500). The suspension system (20) includes raising and lowering components for selectively lowering the rear end (508) of the frame (500) to the roadway, and raising the rear end (508) so that the frame (500) is substantially horizontal. The suspension system (20) retains the frame (500) in a position below the is rolling axis (65) of the wheel (514).

**Probable Assignee:** CAPEHART JEFFREY L

**Earliest Publication Date:** 19990105



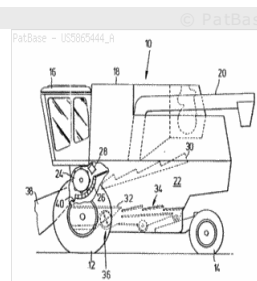
**46) Family number: 11426947** (US5865444A)

#### BODY LEVELING SUSPENSION INCLUDING A PIVOTING ARRANGEMENT

**Abstract:** Source: US5865444A A vehicle (10) intended for operation on level ground is equipped with a chassis (22) and a wheel carrier (50) on which a wheel (12) is supported. In order to operate the vehicle (10) on an incline, a pivoting arrangement (44) is inserted between the wheel carrier (50) and the chassis (22). The pivoting arrangement comprises a mount (52), a pivot arm (54) mounted therein and an actuating arrangement (56) to move the pivot arm (54). The attachment points on the chassis (22) or on a support (46) spaced at a distance thereto and on the wheel carrier (50) are configured in such a way that the wheel carrier (50) can be directly attached to the chassis (22) or to the pivoting arrangement (44).

**Probable Assignee:** DEERE AND CO

**Earliest Publication Date:** 19990202



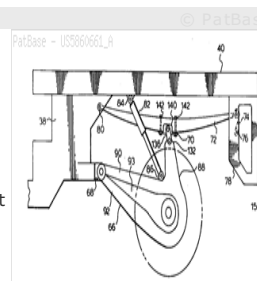
**47) Family number: 15082604** (US5860661A)

#### INDEPENDENT LEAF SPRING SUSPENSION FOR VEHICLE WITH LIFT BOX

**Abstract:** Source: US5860661A A pick-up truck vehicle is provided with an elevatable cargo box to facilitate cargo loading and unloading. The vehicle includes a U-shaped cargo area within which the cargo box is located, thereby requiring removal of all suspension assemblies to the outer sides of the vehicle to permit the cargo box to be movable between elevated and lowered positions. The side-mounted suspension assembly employs a leaf spring coupled to a pivoting wheel carrier. A pair of integrally formed longitudinal members couple the wheel carrier pivotally to the frame, and a transverse, upwardly directed arm is pivotally coupled to the leaf spring by a dual pivot arrangement. Pivoting action therefore is present relative to the frame and the leaf spring. The wheel carrier is integrally formed with the longitudinal members and the upwardly directed arm and is disposed beneath the leaf spring.

**Probable Assignee:** TOOLING TECHNOLOGY CENTRE INC A CANADIAN CORP

**Earliest Publication Date:** 19970612



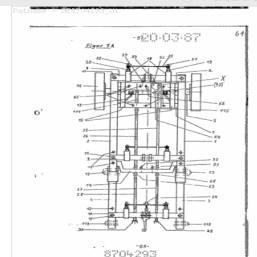
**48) Family number: 16780777** (DE8704293U1)

**Abstract:** Source: DE8704293U1 (Claim 1) Schutzansprüche zeichnet, dass dieser Tragrahmen gegenüber der Triebachse durch zwei Hydraulikzylinder (92, 93), welche die am Tragrahmen in den Aufnahmen (120) schwenkbar befestigte Triebachse gegen den Tragrahmen abstützen, höhenverstellbar ist.

**Machine translation:** (Claim 1) Schutzansprüche records that this support frame opposite the drive axle by two hydraulic cylinders (92, 93) which support the on the support frame in the images (120) pivotally mounted drive axle to the support frame is height adjustable.

**Probable Assignee:** TANZ WERNER 8000 MUENCHEN DE

**Earliest Publication Date:** 19871008



**49) Family number: 16928880** (DE29603283U1)

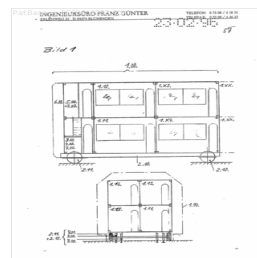
#### PERSON AND/OR GOODS TRANSPORT EQUIPMENT SYSTEM IN MODULAR BUILDING METHOD

**Abstract:** Source: DE29603283U1 (Claim 1) Schutzanspruch ueber Personen- und / oder Guetertransportgeraetes y stemin modularer Bauweise vorzugsweise f uer Stadt- und / oder Umlandverkehr und / oder innerbetrieblicher Verkehr, inc l. Bereitstellung, Lagerung, Montage und/oder Fertigung, dadurch gekennzeichnet, (siehe Bild 1) dass vorzugsweise eine Grundzelle = Grundmodul (1).

**Machine translation:** (Claim 1) right to protection by persons and / or Guetertransportgeraetes y stemin modular preferably f uer city and / or Umlandverkehr und / or in-plant transportation, inc l. provision, storage, assembly and / or production, characterized (see Figure 1) that preference is a basic cell = base module (1)

**Probable Assignee:** GUENTER FRANZ DIPL ING FH

**Earliest Publication Date:** 19970821



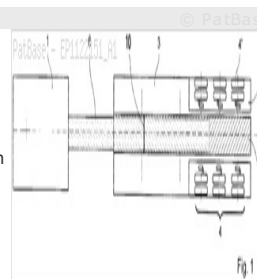
**50) Family number: 17030454 (EP1122151A1)**

#### VEHICLE WITH LOW-LEVEL EXTENSIBLE LOADING PLATFORM

**Abstract:** The vehicle's front and rear support connections(1,2) are telescopically interconnected by a slide shaft(6) which in the retracted state of the vehicle is located with one of its ends between or near to the wheels(4') of the running gear(4). The slide shaft is located level with or below the axle of the wheel. The telescopic connection may be provided by two or more parallel extending slide shafts, each guided in a housing(5). The wheels are mounted on the running gear in an individual wheel suspension, and the slide shaft passes through the running gear.

**Probable Assignee:** GOLDHOFER AG

**Earliest Publication Date:** 20010802



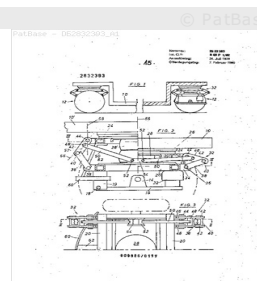
**51) Family number: 1732048 (DE2832393A1)**

#### TRANSPORT-, INSBESONDERE TIEFLADE- STRASSENFAHRZEUG MIT VERAENDERBARER BODENFREIHEIT VARIABLE SUSPENSION FOR LOW LOADER - HAS AXLE ON GUIDED SUBFRAME LINKED TO CHASSIS BY PNEUMATIC RAM

**Abstract:** Source: DE2832393A1 "Transport-, insbesondere Tieflade- Strassenfahrzeug mit veraenderbarer Bodenfreiheit" Patentansprueche Transport-, insbesondere Tieflade-Strassenfahrzeug, dessen Lastplattform von vorzugsweise gefederten Fahrge stellen getragen ist, von denen mindestens eines mit einer Hubvorrichtung zum Veraendern der Bodenfreiheit der Last- plattform versehen ist, dadurchgekennzeichnet, dass jede Hubvorrichtung einen vom Fahrgestell (12) vorzugsweise federnd abgestuetzten unteren Rahmen (20) sowie einen oberen Rahmen (24) aufweist, der am unteren Rahmen durch einen flexiblen, durch Druckluftzufuhr aufblaehbaren Balg (28') abgestuetzt und durch eine Parallelfuehrung (32) lotrecht beweglich gefuehrt ist 2. The wheels of the low loader are supported by a pneumatic damper (28) between upper (10) and lower (20) platforms, with the lower platform supporting the axle (14). The platforms are linked by scissors type of levers to ensure that the relative movement is in a controlled vertical direction. The suspension is mounted over the axles and provides a large degree of adjustment. This enables the vehicle to negotiate steep loading of ships etc. without danger of jamming on the roadway. The scirros levers provide lateral stability when the suspension is extended.

**Probable Assignee:** UNTERHOLZNER FAHRZEUGFAB

**Earliest Publication Date:** 19800207



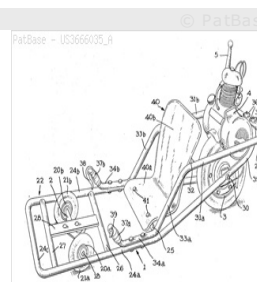
**52) Family number: 18273597 (US3666035A)**

#### SPORTS VEHICLE STEERED BY INCLINATION OF DRIVER{40 S BODY

**Abstract:** Source: US3666035A The invention relates to a three-wheeled power-driven vehicle wherein a motor driven frictional driving member is brought into engagement with a ground engaged traction wheel with steering of the vehicle being accomplished by the driver thereof leaning laterally toward one side or the other of the vehicle.

**Probable Assignee:** DUDOUYT

**Earliest Publication Date:** 19700401



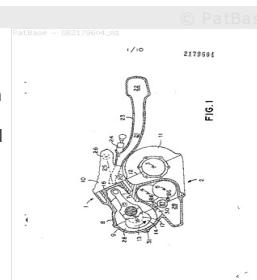
**53) Family number: 2025862 (GB2179604A)**

#### COMPACT VEHICLE DRIVE UNIT

**Abstract:** Source: GB2179604A An integrated power unit has its cylinders 7 inclined above the transmission system 2 which provides output drive along the final drive axis 3. This axis coincides with the plane 12 of the cylinder head joint, permitting simplified construction. The unit may be installed transversely in a vehicle in a laterally symmetrical manner, driving equal length output shafts, with suspension systems as also disclosed herein attached directly to its casings, and with the resultant assemblage flexibly mounted to the vehicle in a manner also disclosed. In a rear drive vehicle the induction manifold 23 lies beneath the boot floor. The clutch (not shown) is mounted on the gearbox mainshaft axis 4, driven from the crankshaft 14 by a primary drive having two gears only (not shown), and an arrangement of multi-speed transmission gearing along axes 3,4 and 5 is also disclosed which provides a number of direct drive paths.

**Probable Assignee:** NAT RES DEV

**Earliest Publication Date:** 19870311



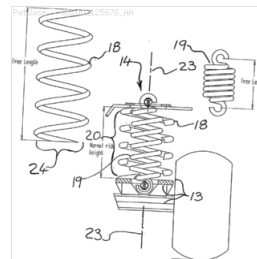
**54) Family number: 28300827 (US2002125676A)**

#### OPPOSING SPRING RESILIENT TENSION SUSPENSION SYSTEM

**Abstract:** Source: US2002125676A A suspension and method for using unsprung weight of the wheels and axles to assist in reducing the motion of the sprung weight of chassis and/or body. The suspension has a load spring supporting the sprung weight at a ride height and another spring between the wheel axle support and the chassis and/or body that exerts increasing force with motion of the sprung weight away from the axle and reducing its force on the load spring during jounce as the member resists the motion of sprung weight.

**Probable Assignee:** AMTECH CORP

**Earliest Publication Date:** 20020912



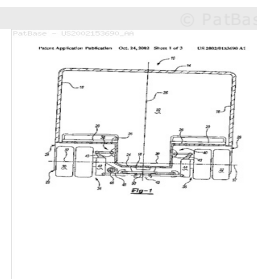
**55) Family number: 28303235 (US2002153690A)**

## INDEPENDENT SUSPENSION SYSTEM FOR A LOW FLOOR VEHICLE

**Abstract:** Source: US2002153690A A first and second hub assembly supported by an independent suspension system allows the independent articulation of each hub assembly. An input gear box includes a reduction gear set that drives a reduction gear set at each hub assembly. The input gear box is mounted offset from the first axis and the vehicle longitudinal axis to simultaneously drive both hub assemblies to allow a lowered vehicle floor profile.

**Probable Assignee:** MERITOR HEAVY VEHICLE TECHNOLOGY LLC

**Earliest Publication Date:** 20021024



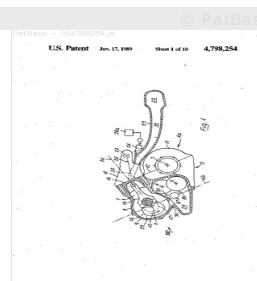
**56) Family number: 2875135 (US4798254A)**

## COMPONENTS IN OR FOR SELF-POWERED VEHICLES

**Abstract:** Source: US4798254A Components in or for self-powered vehicles, including in particular an integrated power unit in which a reciprocating-piston internal combustion engine and a item in which the engine cylinders and the principal rotary plane which lies normal to the cylinder axes and includes the engine crankshaft axis. Compactness and simplicity are further promoted by designing the casing structure of the power unit to include an indivisible main component which encases parts of both the engine and the transmission system. The invention also includes features combined with and/or related to such a power unit, including a specific design for the transmission system, an arrangement of the induction system for the engine, installation arrangements for the power unit within vehicles, and related vehicle suspension systems.

**Probable Assignee:** BRITISH TECHNOLOGY GROUP LTD

**Earliest Publication Date:** 19880914



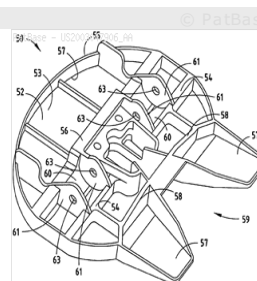
**57) Family number: 29494150 (US2003047906A)**

## LIGHTWEIGHT NARROW-SPAN FIFTH WHEEL

**Abstract:** Source: US2003047906A A short span fifth wheel hitch comprising a hitch plate, at least one back rib, a peripheral flange connected to ends of the back rib, and a main rib extending between the back rib and a portion of the peripheral flange, with the main rib being connected to ends of the peripheral flange. The fifth wheel hitch also includes skirts extending from the hitch plate adjacent the back rib. At least two pairs of mounting ribs are located interior of the peripheral flange and the back rib, each pair of mounting ribs including aligned apertures for accepting a mounting pin therein, whereby a mounting bracket can be inserted into a space between the mounting ribs of each pair of mounting ribs and the mounting pin can be placed through the aligned apertures and the mounting bracket to connect the fifth wheel hitch to a tractor.

**Probable Assignee:** SAF HOLLAND INC

**Earliest Publication Date:** 20011220



**58) Family number: 305971 (DE1680616A1)**

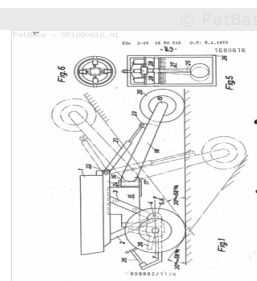
## FAHRZEUG, INSBESONDERE KRAFTFAHRZEUG VEHICLE, IN PARTICULAR MOTOR VEHICLE (MACHINE TRANSLATION)

**Abstract:** Source: DE1680616A1 (Claim 1) 1. Fahrzeug, insbesondere Kraftfahrzeug wie ein Traktor od. dgl., gekennzeichnet durch eine Verstellrichtung (5,6 uLd 13) fuer die L@'ahi-zeu@,raeder (11,12,20), mittels derer die Raeder fuer die Fahrt an Gel@.rdesteigungen u,.\_d::eigungeei so, insbesondere wechselseitig einstellbar sind, dass der Fahrzeugrahmen mit seinem Aufbau die horizontale oder im wesentlichen. horizontale Lage beibehaelt.

**Machine translation:** (Claim 1) 1 Vehicles, particularly motor vehicle like a tractor or the like, gekennzeichnet by eire VER, te-lleirichtung (5.6 uld 13) for the l @ ' @ zeu ahi, wheels (11,12,20), through which the bikes for the ride of gel rdesteigungen @ u, \_e::: eigungeii so particular are mutually adjusted to the vehicle frame with its construction in the horizontal or essential. horizontal Lage maintains.

**Probable Assignee:** FUCHS GUENTHER

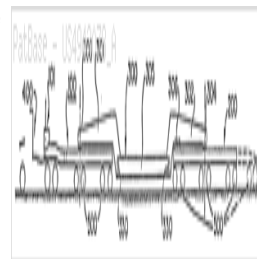
**Earliest Publication Date:** 19700108



**59) Family number: 3152482 (US4943078A)**

## HEAVY DUTY TRANSPORT VEHICLE

**Abstract:** Source: US4943078A A heavy load hauler for travelling on conventional road ways to move, for example heavy construction equipment such as cranes or the like from one work site to another. The hauler includes a front tractor drawn carriage, a rear carriage and a load unit disposed between and carried by such carriages. The front carriage is supported upon a multiplicity of independent wheel and axle units. There is a first fifth wheel coupling at the leading end of the front carriage, for connecting to the fifth wheel coupling of a tractor, and a second fifth wheel coupling spaced rearwardly therefrom. The load carrying rear carriage is also supported upon a multiplicity of independent wheel and axle units and there is a fifth wheel coupling intermediate the leading and trailing ends of such carriage. The load unit has detachably connected thereto a forwardly projecting and a rearwardly projecting pair of goosenecks and each has a fifth wheel coupling with the one on the forwardly projecting gooseneck connected to the fifth wheel coupling on the front carriage and the other to the fifth wheel coupling on the rear carriage. The load unit may be either the crane itself or a flatbed upon which the crane is carried. At least some of the independent wheel and axle units are steerably mounted on the carriage associated therewith. The independent wheel and axis unit has the wheels thereof supported by a hydraulic suspension and included is hydraulic circuitry that interconnects all of the suspensions so as to distribute equally the load among all of the wheel units. Steering of the independent wheel and axle units is interphased for the front and rear carriages by a pair of operatively associated inter-related in-line valve cylinder units.



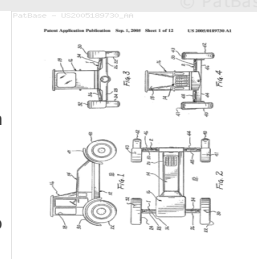
**Probable Assignee:** DIELEMAN ROBERT D

**Earliest Publication Date:** 19891102

**60) Family number: 32198737 (US2005189730A)**

## MULTI-CONFIGURABLE TRACTOR

**Abstract:** Source: US2005189730A A tractor includes a motor, transmission, drive shaft and rear differential for driving the rear axles mounted on a main tubular frame of a variable configuration. Forwardly extendable telescoping tubular frame members are actuated by respective rams to selectively increase the wheel base between the front and rear wheels. The front and rear telescoping tubes supporting each of the wheels are selectively extendable to significantly increase the wheel width of the tractor; the axles for the rear wheels are commensurately extendable. A toolbar dependently supported from the main frame in front of the cab permits the operator to view the operation of attached implements while driving. The toolbar may include a row guide causing the toolbar to move laterally as necessary to follow a row and the toolbar is connected to the steering mechanism to control the direction of travel of the tractor. The front wheels are pivotally mounted on the corresponding telescoping tubes to provide sufficient clearance to permit near 180 degrees pivotal movement. The steering mechanism is capable of pivoting each front wheel through an angle of about 180 degrees and establishes an appropriate geometric relationship between the front wheels to permit the tractor to turn about any center of rotation intersected by the common axis of rotation of the rear axle, including pivoting about either rear wheel, while maintaining the axis of rotation of each front wheel in intercepting relationship with the center of rotation. Moreover, the turn radius at the end of a row is minimal and can be further reduced by temporarily reducing the length of the frame. Various implements, including a toolbar, can be readily attached directly to the tubular frame at any location intermediate the front and rear axles, as necessary.



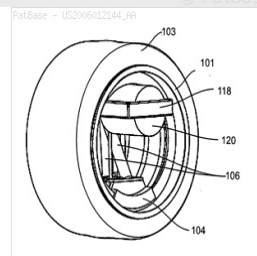
**Probable Assignee:** WHITE TRUST DEBRA ARLENE GLAD

**Earliest Publication Date:** 20050901

**61) Family number: 32564938 (US2006012144A)**

## WHEEL-EMBEDDED SUSPENSION

**Abstract:** Source: US2006012144A An in-the-wheel suspension system including a drive mechanism for coupling the rotational motion of a wheel rim to the drive shaft of an electric motor and for supporting the wheel rim with respect to the vehicle chassis using one or more springs and dampers. In a hubless version, a spring member supports extend between a frame member attached to the chassis and a bearing member that engages with the rim. In a version used with a wheel hub, the hub is supported by an axle and the spring member supports the axle in movable relation to the frame member. A pivoting support arm that is attached to the axle and pivots about a pivot point attached to the frame member at a location spaced from the wheel axis may be used to support the hub. A Peaucellier linkage may be used to support the axle for movement along a straight line vertical path, the linkage being attached to the frame member at two fixed pivot points. The wheel suspension units perform all the traditional drivetrain functions independently and can be attached to the chassis in a manner that allows for easy removal.



**Probable Assignee:** MASSACHUSETTS INST OF TECHNOLOGY

**Earliest Publication Date:** 20060119

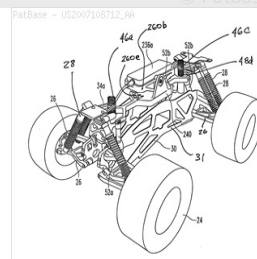
**62) Family number: 34466585 (US2007108712A)**

## SHOCK ISOLATION CRADLE

**Abstract:** Source: US2007108712A Methods and apparatus for supporting a payload within a vehicle, especially a land vehicle. In some embodiments, the apparatus includes a cradle that permits the payload to translate fore and aft during sudden decelerations of the vehicle, such as when an off road vehicle runs into an obstacle. Preferably, the payload motion is damped by dampeners that couple the payload to the vehicle.

**Probable Assignee:** JRI DEVELOPMENT GROUP LLC

**Earliest Publication Date:** 20070517



**63) Family number: 3989481 (US3903979A)**

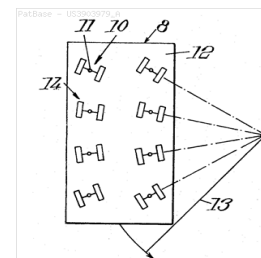
## HEAVY-DUTY MOTOR VEHICLES

**Abstract:** Source: US3903979A A steering mechanism for a self-propelled vehicle is carried by a plurality of rows each of several axles. It has a main steering system for angular control of all said axles by the driver for causing the vehicle to follow a circular path with all axles converging toward the center of the circular path. Each of the axles is provided with a locking mechanism for optional coupling or uncoupling of the axle with the main steering system. An additional system for angularly moving the axles to or from a position transverse to the position of straight front movement of the vehicle, comprises power cylinders independent from the main driving system and operatively connected to said axles and which in de-activated condition do not impede control of the axles by the main steering system. Claims, 10 Drawing Figures

PatBase

**Probable Assignee:** J B NICHOLAS FRANCE

**Earliest Publication Date:** 19740711



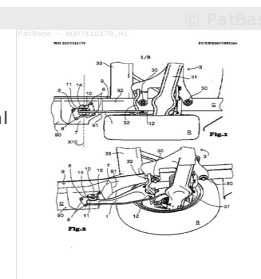
**64) Family number:** 40495160 (WO07116179A1)

#### REAR AXLE OF A VEHICLE, IN PARTICULAR A MOTOR VEHICLE, AND VEHICLE EQUIPPED WITH SUCH A REAR AXLE

**Abstract:** The invention relates to a rear axle of a vehicle, in particular a motor vehicle, comprising two longitudinal arms (11) each having one end (11) pivoted in an axle clevis (5) about a pivot axis (10), each of said axle clevises (5) being fastened to the vehicle chassis by means of a fastening device, characterized in that said fastening device comprises a clevis support (7) arranged between the axle clevis (5) and the chassis, said clevis support (7) comprising a plate (70) fastened securely to the chassis and having a cutout tailored to accommodate axle clevises (5) having pivot axes (10) of different direction, said clevis (5) being fastened to said support (7) by fastening means (8).

**Probable Assignee:** PEUGEOT CITROEN AUTOMOBILES SA

**Earliest Publication Date:** 20071012



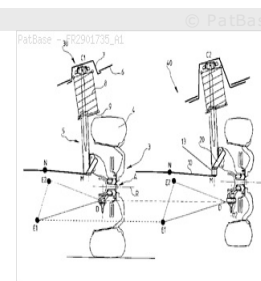
**65) Family number:** 40924988 (FR2901736B)

#### DISPOSITIF D'ADAPTATION POUR UN TRAIN AVANT D'UN VEHICULE AUTOMOBILE ET VEHICULE AUTOMOBILE COMPORTANT UN TEL DISPOSITIF

**Abstract:** The device has spacers (12, 13) that are added to a connection between a hub carrier and an A arm and to another connection between a tie rod (10) and the carrier respectively. Height of the spacers are determined for compensating a difference between diameters of a base vehicle wheel and a specific vehicle wheel. A cup (4) supports a suspension spring (8) and is placed at an upper end of a Macpherson strut (5), by being supported against a vehicle body and against the spring. The cup allows to control the height of a vehicle body.

**Probable Assignee:** PEUGEOT CITROEN AUTOMOBILES SA

**Earliest Publication Date:** 20071207



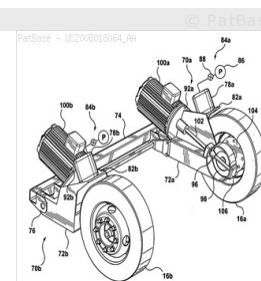
**66) Family number:** 41118531 (US2008018064A)

#### DELIVERY VEHICLE

**Abstract:** Source: US2008018064A A vehicle has a body and at least two trailing arm suspensions, one proximate each side of the body. Each trailing arm suspension has a swing arm pivotably mounted at one end to the body and a fluid suspension extending between the swing arm and the body. A wheel is rotatably mounted to a free end of each swing arm. A power plant is provided for powering each wheel and a control system is provided for controlling a volume of fluid in each fluid suspension. The vehicle may have a longitudinally extending body with a sliding side door riding along a track configured such that said door has an open position extending transversely of said body. The vehicle may have a monocoque body with at least substantially planar sides and at least one parcel shelf extending along an inside of, and attached to, each of the sides for stiffening the sides and resisting torsion.

**Probable Assignee:** UNICELL LTD

**Earliest Publication Date:** 20080118



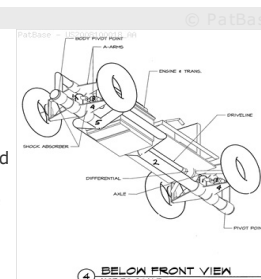
**67) Family number:** 41771178 (US2008100018A)

#### VEHICLE SUSPENSION SYSTEM

**Abstract:** Source: US2008100018A The invention is a suspension system for a three (3) or more wheeled vehicle, which vehicle tilts from the vertical plane during operation in a manner like that of a motorcycle. The suspension system divides the vehicle into two parts. The first part consists of the front, possibly the rear wheel(s), passenger compartment, and possibly a cargo compartment connected in such a way that they lean or tilt together. The second part, the rest of the vehicle, does not lean or tilt. The non-tilting components are connected to a rigid structure that extends from the front to the rear suspension where it is connected to each wheel's spring and shock absorber. The non-tilting portion of the vehicle provides resistance for each wheel's shock absorber and spring to act against, leaving the tilting portion free to lean like a motorcycle. The accompanying drawing sheets 1 through 5, inclusive, depict the suspension system with four (4) wheels and a dual "A arm" independent suspension common to many traditional motor vehicles, but the concept of which, dividing the vehicle into tilting and non-tilting components with the suspension acting on the non-tilting portion, can be adapted to a vehicle with 2 front tilting wheels with one or two rear wheels that tilt or do not tilt, other suspension springs such as coil, leaf, hydraulic, or pneumatic, and other independent or solid axle suspension systems.

**Probable Assignee:** DIEZIGER HELEN IRENE

**Earliest Publication Date:** 20080501



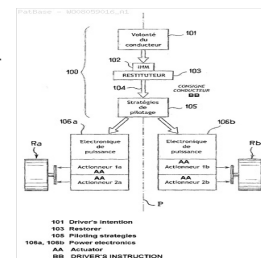
**68) Family number:** 41819200 (WO08059016A1)

#### STEERING SYSTEM FOR AUTOMOBILE VEHICLE

**Abstract:** Te system of the invention includes a steering axle bearing connected through a pivot link to the wheel axle (ra, Rb) of a vehicle, as well as a first actuator (1a, 1b) driven by a monitoring and control circuit (100) adapted for controlling the steering orientation of the wheel (Ra, Rb). According to the invention, the system further includes a second actuator (2a, 2b) also driven by a monitoring and control circuit and adapted to modify the camber angle of said wheel (Ra, Rb). Application in automotive construction.

**Probable Assignee:** RENAULT SA

**Earliest Publication Date:** 20080522



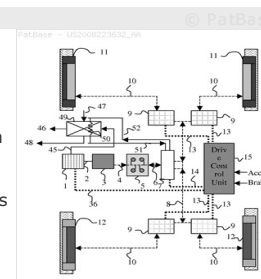
**69) Family number:** 42164690 (US2008223632A)

## HYBRID DRIVETRAIN WITH WASTE HEAT ENERGY CONVERSION INTO ELECTRICITY

**Abstract:** Source: US2008223632A A thermal-to-electrical conversion system converts internal combustion engine exhaust heat into useful electrical energy in a hybrid vehicle system. The converted energy is sent to an energy-storage control system via a DC-DC converter. High power-density storage medium (e.g. ultracapacitors) is used in the designated "short-cycle" hybrid design to maximize transfer efficiency and capacity while minimizing weight. An upconversion circuit within the control system allows high use of the storage capacity. Employed in a lightweight vehicle platform, the system addresses the most significant barriers to achieving high transportation efficiency-mass and combustion energy loss to waste heat.

**Probable Assignee:** BARTILSON BRADLEY WAYNE

**Earliest Publication Date:** 20080918



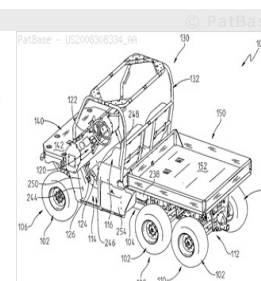
**70) Family number:** 42176671 (US2008308334A)

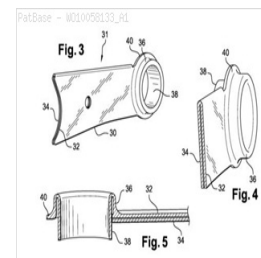
## VEHICLE WITH SPACE UTILIZATION

**Abstract:** Source: US2008308334A A utility vehicle with space utilization features is disclosed. The space utilization features provide storage and access to components.

**Probable Assignee:** POLARIS IND INC

**Earliest Publication Date:** 20080925





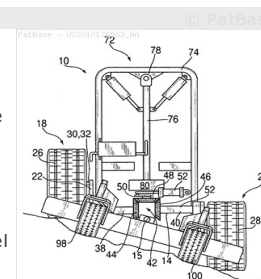
**74) Family number: 45961037** (US2010176563A)

#### AUTOMATIC LEVELING VEHICLE

**Abstract:** Source: US2010176563A An automatic leveling vehicle comprising a front frame section and a rear frame section interconnected by a swivel joint which permits pivotable movement of the front frame section relative to the rear frame section about a generally horizontal axis extending longitudinally of the vehicle, a gear train attached to the rear frame section, right and left rear wheel assemblies, right and left rear axle assemblies operatively interconnecting the gear train, a lever arm connected to the gear train for controlling the position of the rear axle assemblies, selective movement of the lever arm causing the right and left rear axle assemblies to move their associated wheel assemblies up or down in opposite directions, a level detector for producing and applying leveling signals for positioning a lever arm control such that the rear frame section is maintained in a relatively level orientation when the rear wheel assemblies encounter an uneven terrain.

**Probable Assignee:** MADLER HERMAN

**Earliest Publication Date:** 20100715



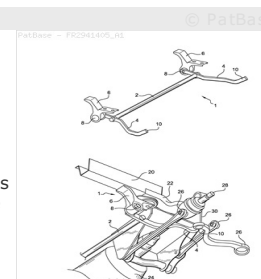
**75) Family number: 46417914** (FR2941405A)

#### ANTI-ROLL BAR FOR USE ON TRAIN OF WHEELS OF MOTOR VEHICLE, HAS TORSION PART WHOSE EACH END IS FIXED TO LEVER AT POINT LOCATED BETWEEN BEARING OF LEVER AND MOBILE END OF LEVER, WHERE MOBILE END IS SUBJECTED TO SUSPENSION TRAVEL OF WHEEL

**Abstract:** The bar (1) has a central torsion part (2) transversely placed and with ends related to suspension travel of wheels of an axle system for applying torsion torque on the ends. Each end is fixed to a longitudinally placed lever (4) at a point located between a bearing (8) of the lever and a mobile end (10) of the lever. The bearing forms a support (6) connected to a body shell of a vehicle, and the mobile end is subjected to the suspension travel of the respective wheel. A transversal axle is fixed on the lever and surrounded by a rubber block maintained in the support to form the bearing.

**Probable Assignee:** PEUGEOT CITROEN AUTOMOBILES SA

**Earliest Publication Date:** 20100730



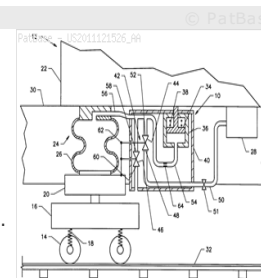
**76) Family number: 48961660** (US2011121526A)

#### VERTICAL POSITION COMPENSATING DEVICE FOR A VEHICLE

**Abstract:** Source: US2011121526A A vertical position compensating device for a vehicle, a vehicle using the device, and a method for controlling the vertical position of a vehicle. The vehicle has a wheel set mounted on a chassis by a primary suspension system and a body mounted on the chassis through a secondary suspension system. The device is mounted on the body. As the vehicle is loaded or unloaded the device moves vertically with the body and also moves relative to the body in proportion to the deflection of the primary suspension system. The total motion of the device is used to adjust the vertical position of the body through the secondary suspension in a direction opposite to the deflection of the body to maintain the position of the body constant relative to a datum line.

**Probable Assignee:** LTK CONSULTING SERVICES INC

**Earliest Publication Date:** 20110526



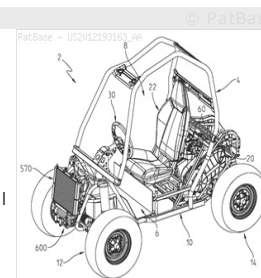
**77) Family number: 51605850** (US2012193163A)

#### ALL TERRAIN VEHICLE

**Abstract:** Source: US2012193163A An ATV is disclosed having a frame, a seat supported by the frame, front and rear wheels supporting the frame, a drivetrain supported by the frame, and an operator's compartment extending generally between the seat and a front enclosure. The front enclosure extends forwardly to a position proximate an axial centerline of the front wheels. Front lower alignment arms have an inner end and an outer end. Front struts have a shock absorber and a hub portion, where the front struts are coupled to the front lower alignment arms at a lower end of the front struts and the frame at an upper end. A steering mechanism is positioned forward of the axial centerline of the front wheels and is coupled to the front struts.

**Probable Assignee:** POLARIS IND INC

**Earliest Publication Date:** 20120802



**78) Family number: 51739755** (US2012217078A)

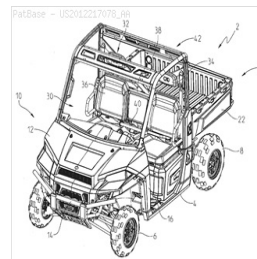
#### SIDE BY SIDE ALL TERRAIN VEHICLE

PatBase - US2012217078A

**Abstract:** Source: US2012217078A A utility vehicle comprises at least one front ground engaging member; at least one rear ground engaging member; and a frame extending in a longitudinal direction of the vehicle. The frame includes a front portion, a rear portion, and a channel member extending in the longitudinal direction between the front and rear portions. The vehicle further comprises a floor board coupled to the channel member and a powertrain assembly having a drive shaft operably coupled to at least one of the front ground engaging member and the rear ground engaging member. Additionally, the vehicle comprises a plurality of transport lines configured to transport at least one of a fluid and an electrical connection between the front portion and the rear portion of the frame. The channel member is positioned intermediate the drive shaft and the transport lines and is configured to support the transport lines.

**Probable Assignee:** POLARIS IND INC

**Earliest Publication Date:** 20120816



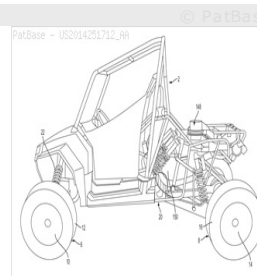
**79) Family number: 57355583 (US2014251712A)**

## UTILITY VEHICLE

**Abstract:** Source: US2014251712A A vehicle is described herein having a rear drive mounted to a sub-frame where the sub-frame is movable relative to the frame, and where a suspension is movable relative to the sub-frame. Thus the vertical travel of the wheels is a combination of the vertical travel of the wheels relative to the sub-frame and the vertical travel of the sub-frame relative to the frame. The sub-frame could be in the front or the rear, or both.

**Probable Assignee:** POLARIS IND INC

**Earliest Publication Date:** 20140911



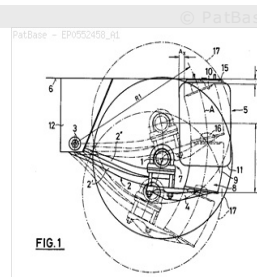
**80) Family number: 8975467 (EP0552458A1)**

## VEHICLE AXLE SUSPENSION.

**Abstract:** The invention relates to an axle suspension for a vehicle axle having an axle body (1), with in each case at least one leaf spring arrangement (2) on each side of the vertical centre plane of the vehicle, which leaf spring arrangement (2) is coupled at its front end to a bearing point (3) fixed to the chassis and is clamped rigidly to the axle body at a distance therefrom and on whose rear free end the vehicle chassis is supported by means of pneumatic spring (5) which is constructed as a plunger piston arrangement (8) and has a cylindrical plunger piston which is preferably equipped with a circular cross-section and an air spring bellows, the geometric centre axis of the plunger piston and, essentially corresponding thereto, the outer casing (9) of the plunger piston being concavely curved - viewed from the bearing point (3) - in order to increase the spring travel of the axle.

**Probable Assignee:** SAUER ACHSENFAB

**Earliest Publication Date:** 19930715



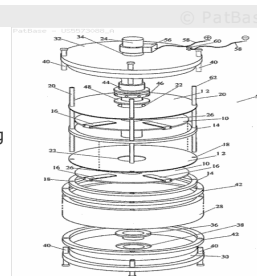
**81) Family number: 12845038 (US5573088A)**

## CONTROLLABLE RESISTANCE DEVICE AND FORCE DAMPENER, AND VEHICLE UTILIZING THE SAME

**Abstract:** Source: US5573088A A variable resistance device capable of utilizing a variable viscosity material, such as an electro-rheological fluid or a magneto-rheological fluid. In one embodiment, a moving member is provided having at least one projecting member for defining a flow path of the variable viscosity material, and for maintaining a precise gap distance between the moving member and other components of the variable resistance device. The moving member engages a shaft so that the moving member is rotatable by the shaft about the longitudinal axis of the shaft, and is also slidable on the shaft along the longitudinal axis. A controllable force dampener device is also provided. In one embodiment, a first expandable bellows and a second expandable bellows is separated by an ER fluid (or MR fluid) valve for controllably restricting the flow of the variable viscosity material between the first bellows and the second bellows to effect active force dampening. The variable resistance device and the force dampener are incorporated into a drive train/braking system and suspension system of a vehicle. Other uses of the inventive variable resistance device include a high efficiency wind-to-energy generator, a reel for the controlled unwinding of a line, a variable resistance exercise device, a safety brake for a circular saw, and other applications where controlled resistance is desired. Other uses of the force dampener include earthquake-proof buildings, dampening vibration of a helicopter rotor or airplane propeller, a high-precision weapons mount, engine mounts, and other applications where active controllable dampening of force is desired.

**Probable Assignee:** DANIELS JOHN J

**Earliest Publication Date:** 19961112



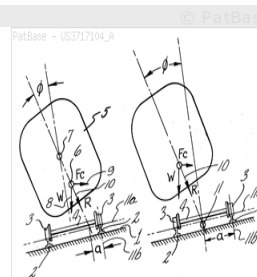
**82) Family number: 1297326 (US3717104A)**

## ACTIVE ROLL CONTROLLING TRUCK STABILIZING MECHANISM

**Abstract:** Source: US3717104A A stabilizing railway vehicle suspension apparatus incorporates swing arms, actuators, springs and a control system so disposed as to automatically impart both rolling and lateral transverse motions to the car body when operating on curved track. The swing arms are mounted on the truck bolster and are directed upwardly and outwardly to their pivotal mountings on the roll platform upon which the car body is suspended by springs. Upon signal from an accelerometer mounted on the roll platform or truck the control system actuates the mechanism so as to roll and translate the car body in a manner that provides improved passenger comfort and improved stability against overturning.

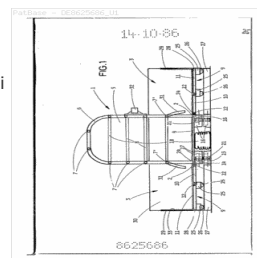
**Probable Assignee:** UNITED AIRCRAFT CORP

**Earliest Publication Date:** 19730220



**83) Family number: 16738945 (DE8625686U1)**

**Abstract:** Source: DE8625686U1 (Claim 1) 1. Abferkelstation mit - einem im Grundriss vorzugsweise rechteckigen Kaefig (1) fuer die Muttersau, und -seitlich entlangzweiergegenueberliegender Laengsseiten (2) des Kaefigs (1) angeordneten, an ihren freien Aussenseiten (28) von etwa vertikalen Seitenwaelnden (29,30) umgebenen Plattformen (9) als Ferkelnester (3), wobei beide Plattformen (9) einerseits und der Kaefigboden (4) andererseits Lei Liegender Muttersau gleichiebig angeordnet und -- bei stehender Muttersau ueber einen Hoehenverstell- antrieb relativ zueinander auf unterschiedliches Niveau verbringbar sind, dadurch gekennzeichnet, dass der Hoehenverstellantrieb aus einem zwischen der Aufstellflaeche bzw. einem Unterrahmen (15) und dem Kaefigboden (4) einliegenden, aufblasbaren, den Kaefig (1) dadurch gegenueber den Plattformen (9) anhebenden Luftbalg (18) besteht.



**Machine translation:** (Claim 1) 1 Abferkelstation with - a floor plan, preferably rectangular cage (1) for the sow, and side along two opposite sides (2) cage (1) arranged at their free outer surfaces (28) of approximately vertical sidewalls (29,30) surrounding platforms (9) as a piglet nest (3), with both platforms (9) on the one hand and the Kaefigboden (4) on the other hand Lei Lying sow arranged gleichiebig and - are at a standstill sow over a height-drive relative to each other verbringbar on different levels, wherein the Height adjustment from one or a sub-floor space between the frame (15) and the Kaefigboden (4) inset, inflatable, the cage (1) is infringed by the platforms (9) lifting bellows (18).

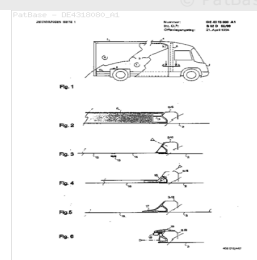
**Probable Assignee:** FRIEDRICH JUERGEN 8671 SELBITZ DE

**Earliest Publication Date:** 19870212

**84) Family number: 17956659 (DE4318080A1)**

#### VARIABLE MODULAR SYSTEM FOR MFG. SPECIAL VEHICLES - HAS DRIVER'S CAB FITTED WITH COUPLING PROFILE FOR ASSEMBLY OF SANDWICHED VEHICLE PANELS

**Abstract:** Source: DE4318080A1 The system contains a driver's cab fitted with a coupling profile for assembly of sandwiched assembly panels. Thus the cab, on connection of the panels, forms an enclosed vehicle body, which can be varied according to the required vehicle function by using different vehicle panels. The cross-section for the coupling profile is pref. integrated in a shaped member, forming part of the driver's cab. In the region of the B-column, the vehicle typically contains a U-shaped frame bracket, to which the front safety belts are joined. USE/ADVANTAGE - For different types of utility vehicles with box body, with economical and simple mfr.



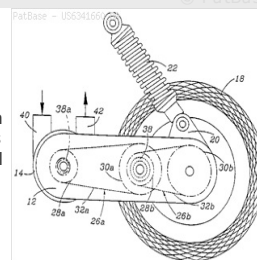
**Probable Assignee:** STROBEL MARTIN DIPL DESIGNER

**Earliest Publication Date:** 19931118

**85) Family number: 20671634 (US6341660B)**

#### SWINGING ARM MOTOR UNIT FOR SINGLE-TRACK OR MULTIPLE-TRACK ELECTRIC MOTOR DRIVEN VEHICLES

**Abstract:** Source: US6341660B A propulsion unit rotating shaft (10) for single track or multiple track vehicles, driven by an electric motor, particularly for motor scooters with a driving motor (14), which is disposed in the region of one end of an extended rotating shaft housing (12) and constructed as an electric motor, and a hub (16), which is mounted rotatably in the region of the other end of the rotating shaft housing and is intended to hold a driving wheel (18) of the vehicle. The driven shaft of the driving motor (14), which is passed into the rotating shaft housing (12), is positively coupled with the wheel hub (16) of the driving wheel of the vehicle by a transmission device (26), encapsulated in the housing for the rotating shaft, and facilities are provided for the pivotable mounting of the housing (12) of the rotating shaft about an axis at a distance from the axis of rotation of the wheel hub (16) and extending parallel to it at or in the frame or chassis of the motor-driven vehicle. In the transmission train between the driving motor (14) and the wheel hub (16), at least one overriding clutch (38a, 38b) is provided, which cancels the positive coupling between the drive shaft of the driving motor and the driving wheel (18) of the vehicle, when the driving moment, initiated in the transmission device (32) by the driving motor (14), is smaller than a torque, acting from the driving wheel (18) of the vehicle over the wheel hub (16) on the transmission device



**Probable Assignee:** SCHILLER HELMUT

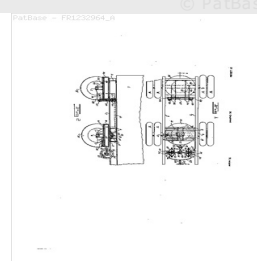
**Earliest Publication Date:** 19981217

**86) Family number: 21468180 (FR1232964A)**

#### SUSPENSION PNEUMATIQUE POUR VEHICULES AUTOMOBILES AIR SUSPENSION FOR MOTOR VEHICLES (MACHINE TRANSLATION)

**Abstract:** Source: FR1232964A (Claim 1) 1 Ce vehicule, comprenant un chassis et un .ssieu avec une suspension pneumatique fixee d'une part a cet essieu et d'autre part au chassis, et agencee pour permettre le pivotement autour d'un axe vertical, est caracterisee en ce que les organes de la suspension pneumatique sont accou ples a un mecanisme engendrant des pressions dif ferentielles et intervenant pour maintenir l'essieu perpendiculaire a la direction d'avancement du chassis lorsque celui-ci suit un parcours rectiligne;

**Machine translation:** (Claim 1) 1 This vehicle comprising a chassis and a .ssieu with air suspension has fixed on the one hand this axle, and on the other hand to the chassis, and arranged to allow pivoting about a vertical axis, is characterized in that the organs of the air suspension are deliv ples has a different mechanism generating ferential pressures and intervening to keep the axle perpendicular to the direction of travel of the frame when it follows a straight path;



**Earliest Publication Date:** 19601012

**87) Family number: 21677371 (FR1221649A)**

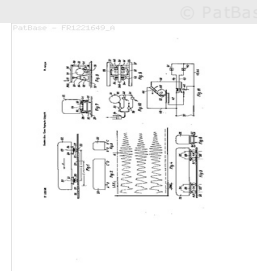
#### PROCEDE ET DISPOSITIF DE CONTROLE DES QUALITES DE MARCHE DES VEHICULES METHOD AND DEVICE FOR CONTROL OF QUALITIES ON VEHICLES (MACHINE TRANSLATION)

**Abstract:** Source: FR1221649A (Claim 1) 1. Les impulsions sont appliquees dans le plan axial vertical d'un train de roues au moins du mecanisme de roulement;

**Machine translation:** (Claim 1) 1. The pulses are applied in the vertical plane of a wheel at least the rolling mechanism;

**Probable Assignee:** GANZ VAGON ES GEPGYAR

**Earliest Publication Date:** 19600602



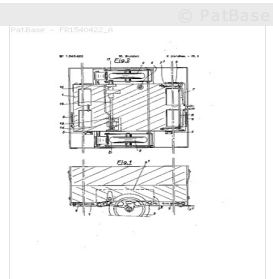
**88) Family number: 21819647** (FR1540422A)

**DISPOSITIF DE BASCULEMENT PAR COMMANDE MANUELLE, POUR LE POSITIONNEMENT VERTICAL SURCHAMP DES CARAVANES PLIANTES LORS DE LEUR GARAGE**  
**SWITCHING DEVICE BY MANUAL CONTROL FOR POSITIONING OF VERTICAL SURCHAMP FOLDING TRAILERS IN THE GARAGE (MACHINE TRANSLATION)**

**Abstract:** Source: FR1540422A (Claim 1) 1 Un faux-chassis pivotant articule lateralement sur le fond de la caravane, pour recevoir les roues demontables ainsi que des bequilles escamotables d'appui au sol; un arbre transversal rotatif solidaire du faux- chassis et entraine manuellement recevant a son extremite une vis sans fin qui coopere avec une roue dentee rotative solidaire d'un bras de levage prenant appui sur la caisse de maniere a permettre son basculement jusqu'a une position verticale d'appui de son cote sur une plateforme mobile; le faux-chassis est ensuite rabattu manuellement et verticalement apres le demontage des roues et rappel du bras de levage.

**Machine translation:** (Claim 1) 1 a subframe swivel articulates laterally on the back of the caravan, to receive the wheels disassembled as crutches retractable ground support, a rotatable cross shaft attached to the subframe and manually receiving leads at its end a screw which cooperates with a toothed wheel fixed to a rotating lift arm resting on the fund so that it can tilt up to a vertical position to support its side on a platform mobile, the subframe is then folded manually and vertically after removal of the wheels and lift arm recall.

**Earliest Publication Date:** 19680927



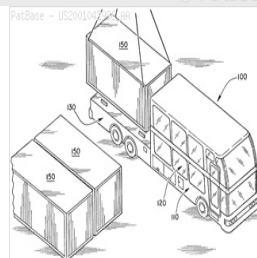
**89) Family number: 28142319** (US2001042996A)

**PASSENGER AND FREIGHT CARRYING VEHICLE**

**Abstract:** Source: US2001042996A A vehicle having a passenger area and a freight area to transport passengers and freight, including an intermodal container. The vehicle is supported by a truck frame connected to a coach spine in a three-dimensional region so that forces from a load on the freight area are distributed over the three-dimensional region and into the passenger area. The vehicle preferably also includes a retractable axle to increase the vehicle's freight hauling capacity. An engine under the rear portion of the freight area is preferably disposed between a forward region defined by a ground clearance height and a vehicle height and a rearward region defined by the departure angle and the vehicle height. The vehicle's suspension system ensures a comfortable ride for passengers under various loading conditions.

**Probable Assignee:** GASPARD II JAMES G

**Earliest Publication Date:** 20010329



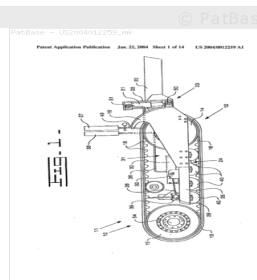
**90) Family number: 30186703** (US2004012259A)

**SUSPENSION SYSTEM, POSITIVE HYDRAULIC BRAKING SYSTEM, POSITIVE DRIVE BELT SYSTEM AND BELT TENSIONING DEVICE FOR WHEEL AND BELT DRIVEN DEVICES**

**Abstract:** Source: US2004012259A A track driven device having a suspension system, positive hydraulic braking system, positive drive belt system and belt tensioning system for an improved ride, reducing belt wear and belt failure.

**Probable Assignee:** SCHEETZ INC

**Earliest Publication Date:** 20040122



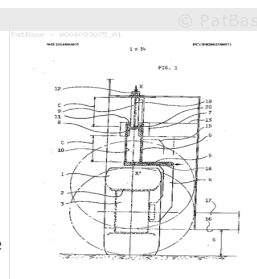
**91) Family number: 31000256** (WO04083075A1)

**SYSTEM FOR CREATING INTERMODAL ROAD, RAIL, RIVER, SEA TRANSPORT VEHICLES AND USES THEREOF**

**Abstract:** A system for creating vehicles and the uses thereof in combined rail, road, river and sea intermodal VTI (65,66) transport, characterized in that the VTI are embodied in various forms according to the function thereof according to the same basic concept, consisting of hydraulically motorized wheel pivots (67) which can be oriented by 180 DEG (90 DEG left or 90 DEG right), comprising gas integrated shock absorbers and means for adjusting the height of the position of the wheels, in some cases resulting in full retraction, said wheels making it possible to travel at 100 kms/hr, characterized in that each wheel is autonomous and is fed by a hydraulic power center which is driven by the thermal motor of the vehicle; also characterized in that said wheel pivots are designed to enable the real or virtual floor of the VTI to be at ground clearance level (G), i.e. approximately 300 mm; further characterized in that said wheel pivots are coupled to the structure of simple or articulated vehicles such as container carriers, motorized containers or transport trucks for pallets or other loads..

**Probable Assignee:** DEJOUX ANDRE

**Earliest Publication Date:** 20040930



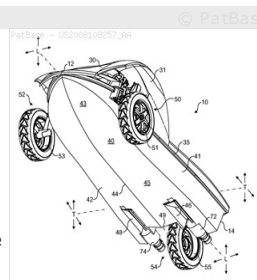
**92) Family number: 33589366** (US2008108257A)

**AMPHIBIAN**

**Abstract:** Source: US2008108257A The present invention provides, with reference to Fig. 1, an amphibian for use in land and marine modes comprising: a planing hull; three wheel stations, two of the three wheel stations being front wheel stations provided one on each side of and in the front half of the amphibian, and the third wheel station being a rear wheel station provided in a central region in the rear half of the amphibian; at least one wheel provided at each wheel station, each wheel being movable between a protracted land mode position and a retracted marine mode position; land propulsion means to propel the amphibian on land in the land mode, the land propulsion means comprising at least one of the wheels; and marine propulsion means to propel the amphibian on water in the marine mode, the marine propulsion means comprising at least two impellers or propellers provided one on each side of the rear wheel station.

**Probable Assignee:** GIBBS TECH LTD

**Earliest Publication Date:** 20080228



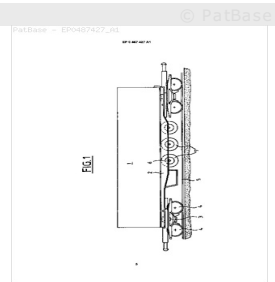
**93) Family number: 3379230** (EP0487427A1)

#### SEMI-TRAILER PARTICULARLY OF THE RAIL-ROAD TYPE WITH RETRACTABLE AXLES.

**Abstract:** Semi-trailer characterised in that each axle (6) supporting the wheels (7) for road use is supported by a chassis (11) mounted pivotably under the platform of the semi-trailer and that this chassis (11) is connected to the semi-trailer platform by at least one toggle joint (12) whose two arms (121, 122), hinged together, are hinged at their free ends, one to the semi-trailer platform and the other to the chassis (11). A thrust actuator (15) is connected to this toggle joint in order to operate it.

**Probable Assignee:** SOVAN IND

**Earliest Publication Date:** 19920527



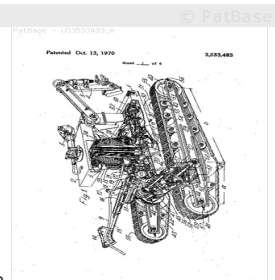
**94) Family number: 410841** (US3533483A)

#### VEHICLE WITH VERTICALLY ANGULARLY ADJUSTABLE ASYMMETRICAL WHEELED FRAMES

**Abstract:** Source: US3533483A 1,218,741. Endless-track vehicles; vehicles for negotiating steps or stairs. UNITED KING- DOM ATOMIC ENERGY AUTHORITY. 6 Feb., 1968 [10 Feb., 1967], No. 6590/67. Headings B7D and B7H. [Also in Division B8] In a manipulator vehicle for negotiating uneven terrain and steps or stairs under remote control, a body 1 is supported by a twin-wheel steerable bogie 30 and by port and starboard endless track assemblies which are rotatable in unison about a common axis of pivotal attachment to the body by power means and are each asymmetrical with respect to that axis. Each endless-track assembly comprises a rubber track 55 entrained around a drive wheel 49 and track wheels 40, 41 and rollers 42 carried by a girder structure 39. Gear-wheels 44 secured to each girder structure 39 are driven by a common transverse shaft 45 which is connected through a gear train 47 and a torque-limiting clutch 48 to a track rotation motor 46 and is lockable by a brake to position the track assemblies in any desired attitude. Each drive wheel 49 is connected by a resilient member 52 to a drive plate 50 on a shaft 37 driven through worm gearing 36 from one of traction motors 35. V-belts 54 extend around grooves 53 in the drive wheels 49 and the track wheels 40 and rollers 42. Raised treads 58 on the tracks 55 are formed with closely-spaced transverse slits. The steerable bogie 30 has twin wheels 31 resiliently mounted thereon and is rotated about a vertical axis by a steering motor and worm gearing 32. A turret head 2 mounted on the body 1 carries television cameras 3 and a power manipulator arm 4. The turret head 2 is supported by an hydraulically-actuated manipulator post 5 rotatably mounted on the body by means of a turntable gear 6. A motor 10 for rotating the gear 6 also drives a cable drum 8 surrounding the post 5. A control and power cable 9 is fed on and off the drum 8 through a layering device 23, a fair lead 12 and a cable guide 14 carried by a spring 15 which is fitted with a sensing device 16 for controlling the speed of the motor 10 and hence the movement of the drum 5 through a variable resistor. The endless-tracks may be dispensed with and tyred wheels substituted for the track wheels shown.

**Probable Assignee:** ATOMIC ENERGY AUTHORITY UK

**Earliest Publication Date:** 19690131



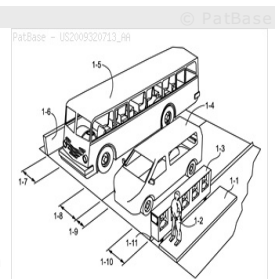
**95) Family number: 43550534** (US2009320713A)

#### PEOPLE AND CARGO TRANSIT SYSTEMS AND VEHICLES

**Abstract:** Source: US2009320713A The Application discloses People and Cargo Transit Systems and Vehicles (PCTSV), using Narrow Vehicles (NV), which can have the form of a Bus, Train, Tram, Maglev, Mono-Rail or even Car or Truck. A preferred version of which is Single Seat Wide or below 70 cm wide, preferably a Bus type to need no Rail, using Dedicated Narrow Lanes adjacent to Curbside of existing intra-city streets or limits of inter-city roads. Said NV and Lane have Anti-Roll Over Means to stabilize such a narrow vehicle, which also eliminate NV Swaying even when NV is a Bus or Car with has no inherent Sway Limiting. Being Ultra Narrow with No Sway and Running at Curbside results in Negligible or No Blocking of other vehicles by NV.Said Lane/Tack, Anti-Sway and Anti-Roll Structures all Allow being Run Over by other Traffic and have structures not to be damaged, thus can be crossed over at Crossroads and other entrances and exits along said Lane. NV has enough Doors and is Narrow, hence each Passenger can reach a seat or exit, with No Isle inside it to walk along. So it can have Low Profile, like a Sports Car, some 120 cm tall. Hence it is easy to have Covered Trenches at cross roads for non-stop crossing. Trenches can run along most or all the Track, in which case adherence to streets and roads is relieved. Such Narrow and Shallow Trenches take a tiny fraction of time and costs of Skyways or Subways. Each Passenger thus can have her own door, own seat, in a small Cabin, which can be opened and closed to next Cabin, have reclining seats to join to that of next Cabin to sleep on, have laptop tray, etc. All those make PCTSV much more appealing to user's, even better than private transport. There are many Variations other than above. There is an NV Car for the last mile and or long distance use, which can integrate with NV Public Transit. Also modifications to NVs for use in Cargo and Parcel Transit.

**Probable Assignee:** AMIRI AHMAD

**Earliest Publication Date:** 20091230



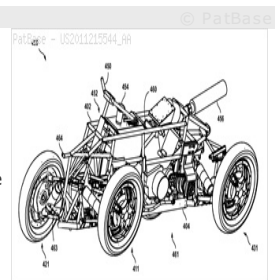
**96) Family number: 49549538** (US2011215544A)

#### VEHICLES, SYSTEMS FOR VEHICLES, AND METHODS FOR VEHICLES ALL TO IMPROVE CORNERING CAPABILITY

**Abstract:** Source: US2011215544A A land vehicle, according to various aspects of the present invention allows the driver to lean with a frame that supports the driver and that pivots on a base. Motion of the frame is coupled to the wheels to adjust a camber of the wheels. The wheels are coupled to the base that provides a reference for independent wheel suspension mechanisms. As a result, banking of the vehicle does not affect the suspension of the wheels. Hydraulic assistance to counteract the forces of the suspension systems is unnecessary.

**Probable Assignee:** RHODIG MICHAEL

**Earliest Publication Date:** 20110908



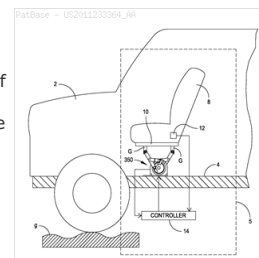
**97) Family number: 49624505** (US2011233364A)

#### ACTUATOR INCLUDING MECHANISM FOR CONVERTING ROTARY MOTION TO LINEAR MOTION

**Abstract:** Source: US2011233364A An active vibration control device is provided that is configured to control the position of a body relative to a reference frame. The control device includes sensors that provide input signals corresponding to movement of the body in at least one direction, a rotary motor configured to control the position of the body, and four-bar linkage connecting the rotary motor to the body. The linkage converts the rotary motion output from the motor into a linear motion of the body. The controller, based on the input signals from the reference frame sensors, provides control signals to the rotary motor which acts through the linkage to position the body in the at least one direction relative to the position of the reference frame.

**Probable Assignee:** BOSE CORP

**Earliest Publication Date:** 20110929



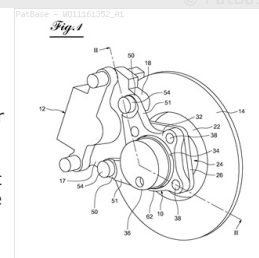
**98) Family number: 50142870 (WO11161352A1)**

#### VEHICLE SUSPENSION SYSTEM COMPRISING A WHEEL CARRIER

**Abstract:** Wheel carrier system for a vehicle axial assembly comprising a suspension arm (66), a brake calliper (12) and a member (24) for guiding the rotation of a brake disc associated with the wheel. The system comprises a mounting plate (10) provided on the one hand with a central part (32) that supports the rotational guidance member (24), which part is interposed between the suspension arm (66) and the rotational guidance member (24), is fixed removably to the suspension arm and has a predetermined thickness (E1) in the direction of the axis of the rotational guidance member and defines the gauge width of the axial assembly and, on the other hand, with at least one lateral part (50) that supports the calliper. The mounting plate can be replaced with another mounting plate, the central part (32) of which has a different predetermined thickness (E2) in order to define an axial assembly with a different gauge width.

**Probable Assignee:** PEUGEOT CITROEN AUTOMOBILES SA

**Earliest Publication Date:** 20111216



**99) Family number: 50752910 (DE102010044776A1)**

#### INDUSTRIAL TRUCK, PARTICULARLY DRIVER SEAT-TRACTOR MACHINE OR DRIVER SEAT-PLATFORM TRUCK, COMPRISES DRIVE MOTOR, PARTICULARLY INTERNAL COMBUSTION ENGINE OR ELECTRIC MOTOR FOR DRIVING IMPELLER

**Abstract:** The industrial truck comprises a drive motor, particularly internal combustion engine or electric motor for driving an impeller. A drive axle unit is provided, particularly a rear axle, which comprises the impeller and a torque support element. The torque support element is arranged in front of the drive axle unit in the traveling direction, and is formed as a spring element.

**Probable Assignee:** VOLK FAHRZEUGBAU GMBH

**Earliest Publication Date:** 20120308

