WITH POWERED MEANS FOR CREATING FLUID FORCE TO ATTRACT VEHICLE TO SURFACE OF TRAVEL

SURFACE EFFECT VEHICLES (I.E., GROUND EFFECT MACHINES)

Having propulsion or control means

Responsive to instability condition

Surface contacting control

Integrated with working fluid

With plural cushions

With dynamic seal or fluid curtain

Spray deflector

Expansible chamber

Fluid bearing or fluid pad

Rigid side walls

Flexible skirt

Having outlet for working fluid

Dynamic seal or fluid curtain

Recirculating

WITH FLUID OR MECHANICAL MEANS TO ACCUMULATE ENERGY (I) DERIVED FROM MOTION OF VEHICLE OR (II) OBTAINED FROM OPERATION OF VEHICLE MOTOR, AND GIVE UP THE ENERGY (1) WHEN NEEDED FOR VEHICLE ACCELERATION OR (2) TO POWER AN AUXILIARY SYSTEM OF THE VEHICLE

WHEELED INFANT CARRIAGE OR CRIB WITH DRIVEN MEANS FOR RECIPROCATING IT LONGITUDINALLY

MOTOR SUPPLIED WITH POWER FROM EXTERNAL SOURCE

Source comprises or includes energy derived from force of nature (e.g., sun, wind)

WITH MEANS FOR CONTROLLING OPERATION RESPONSIVE TO ELECTROMAGNETIC RADIATION, MAGNETIC FORCE, OR SOUND WAVES RECEIVED FROM SOURCE, OR REFLECTED FROM OBJECT OR SURFACE, LOCATED APART FROM VEHICLE

Having controlling means adapted to interact with stationary means which describes course of vehicle's travel

Radiation, force, or waves reflected from external object or surface

WITH MEANS RESPONSIVE TO SPEED OF VEHICLE FOR MAINTAINING SPEED AT, OR PREVENTING IT FROM EXCEEDING, A PARTICULAR VALUE

Including device to signal to operator existence of unusual or intended speed

Including device responsive to centrifugal force

And means to prevent tampering or unauthorized use

Having electrical switch

Including fluid pressure actuated servomechanism

And electrical quantities comparison means for development of input pressure

And one or more electrical components for establishing or regulating input pressure

Including electrically actuated servomechanism

And electrical quantities comparison means for development of electrical input

SKI- OR SKATE-TYPE VEHICLE FOR IMPARTING MOVEMENT TO A PERSON STANDING THEREON

With power means or a portion thereof affixed to or built into the ski or skate

INCLUDING ONE OR MORE SKI-LIKE OR RUNNER MEMBERS

Member substitutable for wheel type support structure

With propulsion element of endless track type

...Track comprises substitute for or addition to propulsion element of traction wheel type

...With at least one surface-engaging propulsion element

...Element shuffles along support surface

...Spiral type element

...Plural elements connected to and spaced along the plural throws of a common crankshaft

...Endless track type element

...Protruding from member

May 2011
...Plural tracks with interconnected drive or support means

...With vertically movable track support located intermediate the forward and rearward extremities of the track

...Plural discrete elements protruding from a wheel, hub, or shaft

...Each element moves relative to wheel, hub, or shaft

...Element comprises traction wheel

WITH MEANS FOR DETECTING WHEEL SLIP DURING VEHICLE ACCELERATION AND CONTROLLING IT BY REDUCING APPLICATION OF POWER TO WHEEL

PORTABLE CARRIER SUPPORTS MOTOR VEHICLE IN TOTO AND IS PROPELLED THEREBY

Comprising rotatably driven auxiliary wheel or endless track

Driven by frictional engagement with tire of vehicle traction wheel

Driven by auxiliary electric or fluid motor

Comprising reciprocably driven stepper or rotatably driven cam

WITH DEVICE FOR PROGRAMMABLY OPERATING VEHICLES STEERABLE WHEELS

STEERING BY DRIVING

Combined with manual steering

Interlocked

Electrical

Fluid

Lever and/or linkage

...With controller cam

...Lost motion type

...Steering

...With hitch

...With track-related steering means

Independently operable drive motors

Electrical

Variable contact

Controlled from rotatably mounted superstructure

Steering responsive to rotary movement of superstructure

Combined

Swinging traction frame responsive to differential drive

Reversing drive to traction element

Endless flexible track

SPECIAL DRIVING DEVICE

Spiral type element

Reaction jet propulsion

Propeller type

Vehicle mounted winch for pulling vehicle

Stepper

Step or abutment ascending/descending type vehicle

Wheel and stepper type

...Non-supporting pusher type stepper

...With alternately lifted supporting base and leg

...With alternately lifted feet or skid

Endless or rotary type

Portable track

Endless, flexible

...Track substituted for drive wheel

...Guided by walking attendant

...With attendant station

....Rider straddles vehicle (e.g., motorcycle)

....Convertible from wheel type

....Track remains with vehicle

....Wheel or track contacts ground

...With auxiliary obstacle surmounting means

...With ground wheel

....Opposite and laterally spaced

....Steering

...With hitch

...Combined

...With track-related steering means

Portable carrier supports motor vehicle in toto and is propelled thereby

With powered, ground-engaging means for producing, or assisting in the production of, lateral movement of the vehicle (e.g., for parking)

Comprising rotatably driven auxiliary wheel or endless track

Driven by frictional engagement with tire of vehicle traction wheel

Driven by auxiliary electric or fluid motor

Comprising reciprocably driven stepper or rotatably driven cam

WITH DEVICE FOR PROGRAMMABLY OPERATING VEHICLES STEERABLE WHEELS

STEERING BY DRIVING

Combined with manual steering

Interlocked

Electrical

Fluid

Lever and/or linkage

...With controller cam

...Lost motion type

...Geared

...With flexible and/or yieldable link

...With hitch

...Combined

...With track-related steering means
9.46 ....Pivoted track frame
9.48 ...Laterally extendable track
9.5 ...Track support mounted for vertical movement
9.52 ...Adjustable
9.54 ...With spring
9.56 .....Longitudinally extending coil spring
9.58 .....Leaf or torsion spring
9.6 .......Transversely extending
9.62 ...Toothed wheel drive
9.64 .......Belt or chain driven
10 ...Annular
11 MOTOR-CARRYING ATTACHMENTS
12 .Driven steering wheel type
13 ...Single wheel
14.1 VEHICLE TRAINS
14.2 .Motorized trailer
14.3 ..All motors supplied from power plant of a single vehicle
14.4 .Drive means between vehicles through coupling
14.6 .Tractor drive effort varied by pull exerted by trailer
14.7 .Vehicle drive drives other vehicle wheel
14.5 ...Overload release
15 ADDITIONAL TRACTION WHEEL
16 TRACTION WHEEL ATTACHMENTS
19.1 STEERED BY WALKING ATTENDANT
19.2 .Who steerably controls steerable wheel
19.3 ..Handle movement controls vehicle drive
20 WITH ROLLERS
21 SPECIAL WHEEL BASE
22 ..Five or more wheels
23 ..Driven steering wheel type
24 ...Stub-axle type
24.01 ..Having tandem steerable or translatable wheels or wheel sets
24.02 ..Displaceable wheel shifts or proportions load
24.03 ..Independently rotatable side-by-side dual wheels
24.04 ..With differential housing integrally fixed to vehicle frame
24.05 ..Rocker beam houses drive means
24.06 ..Plural propelling motors
24.07 ...Separate driving motor for each drive wheel
24.08 ...Each wheel positively driven
24.09 ...With interaxle differential
24.1 ...With drive interrupt means to either tandem drive wheel
24.11 ..Driven tandem wheels
24.12 ...One serially driven by other
24.13 ..Spring rocker beam
205.1 .Rider propulsion with additional source of power, e.g., combustion engine or electric motor(IPC)
205.2 ...Rider propelled cycle with auxiliary combustion engine(IPC)
205.3 ...Control or actuating device therefore; Arrangement thereof(IPC)
205.4 ...Power driven at crank shaft(IPC)
205.5 ...Power driven at axle(IPC)
205.6 ...Power driven at endless flexible drive member, e.g., chain(IPC)
205.7 ...Power driven by friction roller or gear engaging the ground wheel(IPC)
206.1 ...Rider propelled cycle with auxiliary electric motor(IPC)
206.2 ...Control or actuating device therefore(IPC)
206.3 ...Characterized by detector or sensor; Arrangement thereof(IPC)
206.4 ...Power driven at crank shaft(IPC)
206.5 ...Power driven at axle(IPC)
206.6 ...With axle driving shaft arranged coaxially with motor output shaft(IPC)
206.7 ...Power driven at endless flexible drive member, e.g., chain(IPC)
206.8 ...Power driven by friction roller or gear engaging the ground wheel(IPC)
207.1 ...Accessories; Arrangement thereof(IPC)
207.2 ...Solar cell; Arrangement thereof(IPC)
207.3 ...Battery; Arrangement thereof(IPC)
208 ...Collapsible or knockdown for storage or transport
209 With means for changing number of supporting wheels, or for adjusting relative location thereof
210 Having only three wheels
211 Including steerable and driven wheel
212 All wheels motor driven
213 Having motor mounted to swing with steerable wheel
214 Electrical-type motor
215 Including two wheels driven and having common axis of rotation
216 Electrical-type motor
217 Including endless element for transmitting drive to wheels
218 Having only two wheels
219 Arranged in tandem
220 Electrical-type motor
221 Including rotating element for frictionally engaging and driving a wheel
222 And means for steering that wheel
223 Including steerable and driven wheel
224 Both wheels motor driven
225 Having frame element or fender constituting also exhaust or fuel passageway or fuel reservoir
226 Including longitudinally extending shaft for transmitting drive to wheel
227 Including resilient means for mounting driven wheel
228 Including resilient means for mounting motor
229 With means for cooling motor
230 With change-speed means between motor and driven wheel
231 Including endless element for transmitting drive and means for adjusting tension of element

STEAM TRACTION ENGINES
36 Driven steering wheel type
37 Four wheels driven
38 With boiler leveler
39 Spring mounted on axle

WITH MEANS FOR (1) PROTECTING MOTOR FROM IMPACT OF COLLISION, (2) UTILIZING MASS OF MOTOR TO ABSORB FORCE THEREOF, OR (3) PROTECTING OCCUPANT REGION OF VEHICLE FROM IMPACT-INDUCED SHIFTING OF MOTOR

WITH LEVELING DEVICE
HAVING FOUR WHEELS DRIVEN
41 With means for steering all driven wheels
42 Comprising articulated frame and means for pivoting one portion of frame relative to other portion about vertical axis located centrally of vehicle
43 In a path of travel other than that produced by turning the front wheels and the rear wheels substantially equally and oppositely
44 Comprising swingable, plural-wheel-carrying axles on individual, vertical axes of pivot
45 At least one axle being offset from its pivotable axis
46 Including longitudinally extending, endless element for transmitting drive to wheels
47 Including rotatable shaft extending longitudinally from wheels at one end of vehicle to wheels at other end for transmitting steering force thereto
48 Including longitudinally extending, endless element for transmitting drive to wheels
49 Including pump and fluid motor, or generator and electric motor, for driving one or more wheels
50 And another means for driving the remaining driven wheels
51 With means for braking either (1) one or more driven wheels or (2) structure transmitting drive to wheel
52 Including separate mechanical assemblies for transmitting drive to each of two wheels at one end of vehicle
..And assemblies for each of two wheels at other end, also

With manually operated means for disengaging drive to one or more, but fewer than all, of the four wheels

With differential means for driving two wheel sets at dissimilar speeds

..And means for locking out the differential means

...Manually operated type of lockout means

..Including longitudinally extending, endless element for transmitting drive to wheels

HAVING AT LEAST ONE WHEEL BOTH DRIVEN AND STEERABLE

Steerable wheel has exclusive axis of pivot (i.e., stub-axle type)

..Including flexible, axially rotatable means having one portion fixed to vehicle and another portion pivotable with wheel for transmitting drive thereto

...Pivotable portion of means has additional structure of gearlike nature in driving engagement with corresponding structure on wheel

...Means comprises rotatable shaft containing plural universal joints

...Having at least one joint located on each side of axis of pivot

...Pivotable portion of means includes ball or socket element of ball-and socket type universal joint

....Joint includes intermediate ball, floating in groove, for positively engaging ball with socket

...Pivotable portion of means includes gear element of intermeshing gear type universal joint

....Joint includes at least one gear element rotatable on axis of pivot and intermeshing with gear element on pivotable portion

.....Joint also includes gear element on fixed portion engaging gear element on axis of pivot and vertically offset from gear element on pivotable portion

...Having axis of pivot disposed between parallel planes defined by opposite sides of wheel

..With driven axle, mounting two or more wheels, swingable about axis of pivot, and motor mounted to swing therewith

..Having axle offset longitudinally from axis of pivot

..With driven axle, mounting two or more wheels, swingable about axis of pivot, and swingable also about a horizontal axis

..With driven axle, mounting two or more wheels, swingable about axis of pivot, and shaft for transmitting drive coincident with axis

WITH BELT OR HARNESS FOR RESTRaining OCCUPANT, AND MEANS WHEREBY THE BELT OR HARNESS CONTROLS, OR IS CONTROLLED BY, THE FUNCTIONING OF A VEHICLE SYSTEM OR COMPONENT

..System comprises transmission or element thereof

..System comprises ignition circuit or starter circuit or element of one or other

WITH MEANS FOR PROMOTING SAFETY OF VEHICLE, ITS OCCUPANT OR LOAD, OR AN EXTERNAL OBJECT

..Responsive to absence or inattention of operator, or negatively reactive to attempt to operate vehicle by person not qualified mentally or physically to do so

..Utilizing weight, or lack thereof, of operator on seat or other support to determine presence or absence

..Responsive to engagement of portion of perimeter of vehicle with external object
And causing application of vehicle brake

Brake comprises or includes element moved or deformed into engagement with ground

...And also interruption of at least one operational system of the vehicle or its motor

...System comprises clutch

...And causing interruption of an electrical system of the vehicle or its motor

...And causing operation of vehicle steering system

Comprising either movable closure member or fastening device therefor responsive to forward or rearward movement, or variations therein, of vehicle

Responsive to sensing of acceleration, deceleration, or tilt of vehicle

...And causing interruption of ignition circuit

...And also impeding flow of fuel

...And causing disruption of drive train between motor and wheels

Comprising vehicle system or component responsive either to position of movable closure member or to status of fastening device therefor

By preventing unauthorized or unintended access or use

Responsive to failure of taxicab operator to activate fare meter upon boarding of passenger

Comprising device, mechanism, or system for either repositioning a movable or removable closure member or operating a fastening device therefor

Responsive to weight of cargo load transported by vehicle

MOTOR AS SOURCE OF POWER FOR OTHER MACHINE

Other machine is creeper drive on motor vehicle

Other machine is mounted by three point hitch (i.e., Ford-Ferguson hitch)

Hydraulic drive to other machine

Electric drive to other machine

Drive to other machine by power take-off (PTO) driven by wheel or axle of motor vehicle

PTO mounted directly on or engaging drive wheel to rotate therewith

PTO constantly driven with wheel selectively driven

Drive to other machine by power take-off (PTO) at front end of vehicle

Other machine is vehicle accessory

POWER

With spring powered motor

On lower running gear

Rear axle and body

...Longitudinal shaft

...Frame

...Pivoted support on axle

...Electric

...Pivoted support on axle

...Rear axle

Motor moved by axle

Having specific motor-to-body-frame relationship

...With member or mechanism for controlling gearing or clutch, and means for minimizing transfer of movement, caused by operation of motor, to member or mechanism

...With means enabling repositioning of motor and gearing or clutch

...With wheeled auxiliary frame, resiliently joined to body frame, for supporting motor and gearing or clutch

...Including means on body frame or motor for handling exhaust

Having motor shaft parallel to rotational axis of driven wheel

...Including means enabling repositioning of motor

...Including auxiliary frame for motor and resilient means for connecting auxiliary frame to body frame
300 Including means of nonsupporting nature for minimizing operation-induced movement of motor

65.1 Electric
65.21 Hybrid vehicle (IPC)
65.22 Specific vehicle architecture (IPC)
65.225 Series and parallel (IPC)
65.23 Switching type (IPC)
65.235 Differential gearing type (IPC)
65.24 Electrical distribution type (IPC)
65.245 Series (IPC)
65.25 Parallel (IPC)
65.26 Motor assist (IPC)
65.265 Control of multiple systems specific to hybrid operation
65.27 Control of external device in conjunction with specific hybrid function
65.275 Control of individual subunit specific to hybrid operation
65.28 Control of engine specific to hybrid operation
65.285 Control of motor or generator specific to hybrid operation
65.29 Control of battery specific to hybrid operation
65.31 With means on vehicle for generating power for the electric motor
65.51 With motor in or moveable with wheel
65.26 With gearing between electric motor and drive wheel
65.7 Gearing is a changeable ratio gearing
65.8 With electronic devices (logic gates, semi-conductors, vacuum tubes, etc.) in control circuit

301 Including traction motor of turbine type driven by fluid product of combustion
302 Including traction motor of kind driven by expansible fluid from source external of motor
303 Gas is product of treatment of a volatile fluid (e.g., gas is steam)
304 With means to condense gas discharged from motor

305 Including traction motor of kind driven by noncompressible fluid received under pressure from a pump
306 Vehicle includes another system operated by same fluid
307 Having variable displacement type motor or pump
308 Having separate motor for each driven, surface-engaging member
309 With means for handling motor exhaust
310 With means to generate steam for propulsion purpose

68.1 With means to guide and/or control air for power plant cooling
68.2 With further means to utilize power plant cooling air for other purposes
68.3 With means to guide and/or control combustion air for power plant
68.4 Radiators and condensers, mounting
68.6 With protector for the radiator or condenser
68.5 Battery mountings and holders
69.2 Hoods
69.21 Pivoted about horizontal axis extending transversely of vehicle (e.g., alligator type or front end pivot)
69.22 With noise suppression means
69.23 Noise suppression means prevents hood from vibrating (i.e., anti rattlers)
69.24 With access openings having moveable or removable closures
69.25 Water deflectors
69.3 With means to increase idle speed of internal combustion engine to compensate for accessory load
69.4 With fuel supply for internal combustion engine
69.5 Engine uses gaseous fuel
69.6 Vehicle has plural power plants
69.1 Underpans

337 TRANSMISSION MECHANISM
338 Condition responsive (e.g., responsive to speed, load, etc.)
..With particular drive coupling
   ..Relative axial movement
   ..Drive connection to wheel
COMPENSATING DEVICES
WITH PLURAL FUEL TANKS
MANUALLY ACTUATED CONTROLLING DEVICES
..By other than hand or foot of operator
   ..On mine car vehicle
   ..On delivery-type vehicle
   ..With rein means
   ..With vehicle control extension
   ..With plural control stations
   ..Side-by-side
   ..For single control means
   ..With tool or equipment control
   ..Braking controllable by passenger
   ..With movable control station or seat position
   ..Movable cab
   ..Tilting
   ..Simultaneously movable seat and control
   ..Seat on seat portion movable to alternate position
   ..With tool or equipment control
   ..With tiller-type handle
   ..Multiple vehicle functions controllable by single device
   ..With adjustable operator engageable control
   ..With fuel or air throttle control
   ..With transmission control
   ..Steering shaft
STEERING GEAR
. Steering by terrestrial guide
. No mechanical connection between steering shaft and steering gear
   ..Hydraulic
   ..Power assist alarms or disablers
   ..With alternate emergency power means (e.g., pump, gearing, etc.)
   ..With fluid backup
   ..With electrical backup
   ..Each wheel steerable
   ..Occupant steered
   ..With condition modulated steering
Independently controlled steerable wheels

With electric power assist

With electric power assist to all wheels

With fluid power assist

With electrical control

With mechanical power assist

With fluid power assist

Between articulated wheeled vehicle sections

Combined with another steering mode

Reciprocating power assist steering

With electrical control

Vehicle speed condition only

Including swinging axle

Including flexible power transmitting means

Steering column supported

Including rack gear means

With rack and pinion gearing intermediate steering shaft and power assist

Having rotary working member

Having flexible working member

Steering linkage includes interengaging gear means

With plural working members

Working member movement traverses vehicle path

Working member movement traverses vehicle path

Moves separate rod for each wheel steering arm

Working member part engages wheel steering arm

Working member part engages tie rod

Movable working member engages wheel steering arm

Movable working member is a moving cylinder

With linkage intermediate working member and wheel steering arm

Device to control pressure (e.g., valve)

Hydraulic circuit

Specific mechanical feature

Controlling rear wheels

Condition modulated

With mechanical power assist

Swinging axle

Bogie truck having more than one axle

DUST GUARDS

BODIES

With passenger compartment having article receiving or removing means

Tractor and similar vehicle cabs

Movable cab or operator’s station

Tilting

Via power or power enhancing means

Overmotor cab

Movable body portion facilitating engine access

Cab portion

Overmotor cab

With means for handling exhaust of a motor

Dashboards

Footboards and pedal guards

Frame

With structure adapted to receive or support a motor, change-speed gearing, or other power train element

MISCELLANEOUS

ARGICULTURAL-TYPE TRACTORS

DEVICES FOR TRAVERSING VERTICAL SURFACES

SHOCK OR VIBRATION ABSORBING OR TRANSMITTING MEANS BETWEEN WHEEL SUSPENSION AND MOTOR

AIRSTREAM REACTIVE VEHICLE OR VEHICLE STRUCTURE

TRACTION DOLLIES FOR AIRCRAFT

(CROSS REFERENCE ART COLLECTION CREATED IN COMPANION PROJECT)

AXLES

ADJUSTABLE AXLES

MOTORIZED WHEELCHAIRS

MOTOR VEHICLES WITH SHORT WHEELBASE
FOREIGN ART COLLECTIONS

FOR 000 CLASS-RELATED FOREIGN DOCUMENTS

Any foreign patents or nonpatent literature from subclasses that have been reclassified have been transferred directly to the FOR Collections listed below. These Collections contain ONLY foreign patents or nonpatent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

POWER (180/54.1)
   Electric (180/65.1)
FOR 100 ...Combined with nonelectric drive means (180/65.2)
FOR 101 ...Generating means is driven by a prime mover (180/65.4)