(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
4 June 2009 (04.06.2009)

PCT

(10) International Publication Number
WO 2009/069170 A2

(51) International Patent Classification:
B62K 5/00 (2006.01) *B60G 21/05* (2006.01)
B62K 5/04 (2006.01) *B62D 9/02* (2006.01)
B60G 21/00 (2006.01)

(21) International Application Number:
PCT/IT2008/000731

(22) International Filing Date:
27 November 2008 (27.11.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
RM 2007 A000616
27 November 2007 (27.11.2007) IT

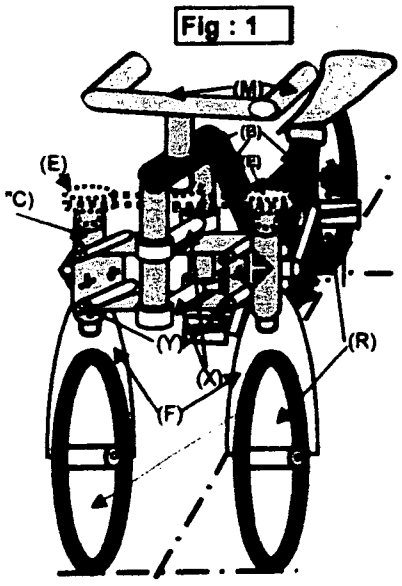
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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

(54) **Title:** INCLINING AND STEERING SYSTEM TO OBTAIN THE TRICYCLE (WITH 2 FRONT WHEELS) OR ALSO THE QUADRICYCLE (WITH OTHER, ONLY INCLINABLE, 2 BACK WHEELS) TO GUIDE BETTER



(57) **Abstract:** The inclining and steering System, object of this innovation, made of a usual main fork lying and welded on top on the vertical motion plane frame under the handle-bar and made of the inclining parallelogram System crosswise swinging between the 2 legs of the fork having its 2 horizontal axes grafted to their 2. dual-joint internally anchorating on each leg of the same fork and made of 2 further usual forks externally anchorating on each side of the inclining parallelogram System supporting the 2 usual forks wheels; this entire System is now able to steer, by driving leverage from the handle-bar and simultaneously to incline the entire vehicle (in this case we obtain a tricycle with 2 front forks-wheels and 1 back). The inclining and steering System is made to obtain the Tricycle (with 2 front wheels and 1 back wheel) or also the Quadricycle (with another inclining System, welded on the back on top on the vertical motion plane frame under the saddle, only inclinable, with 2 back forks-wheels). Each leg of the front main fork or of the back main fork can have inside a telescopic shock- absorber and the behavior of the vehicle(with 3 or 4 wheels) in curve or in straight motion is regular, because the 2 back forks-wheels follow the same kind of inclining and pass on the the same drive tracing whithout sliding. The inclining and steering System is made to obtain the Tricycle (with 2 front wheels and 1 back wheel) or also the Quadricycle(with another inclining System, with 2 other back wheels) The 2 front wheels can have or not the 2 usual fork. It could have the 2 vertical axles externally mounting the front 2 wheels. The same for the Quadricycle with the 2 further back wheels. Obviously, the usual handle-bar, by its usual driving leverages down to the 2 further front forks-wheels, is now able to brake or to steer and or to incline the entire vehicle (in this case the vehicle is a Tricycle). The same for the Quadricycle with the 2 further back wheels, those are only braking and or inclining and pass on the same drive tracing whithout sliding.

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TITLE

Inclining and steering System to obtain the Tricycle (with 2 front wheels) or also the Quadricycle (with other, only inclinable, 2 back wheels) to guide better.

DESCRIPTION

The Inclining steering System(see 1/2=Fig :1,2,3 and 2/2=Fig :1,2) includes: a main forkSyst(A), wich hangs on the inclining parallelogramSyst(D), that holds up one on each side the 2 further forks(F+R) welded to the 2 steering axesSyst(X) with their 2 front-wheels. The entire System is able to steer, by driving leverage from the (M)handle-bar and simultaneously to incline.

Protagonists of the inclinability/steerability are the: (M)handle-bar(by various leverages) and forkSys(A)anchored to (B)frame. Inclining parallelogramSys(D) that supports sidely the 2 steerable axlesSyst('C) and the 2 front forks-wheels(F&R). The inclining and steeringSystem (see 1/2=Fig :1,2,3 and 2/2=Fig :1,2) is an innovation permitting to build a tricycle and a quadricycle (first with 3, then with 4 wheels on the ground, but the 2 back wheels must be only inclining).

These vehicles stand up, incline and steer like a bicycle,but in various mode,they are steadily and safely. The new project of the bicycle, using this inclining and steering System, realizes the tricycle(2 front wheels) or quadricycle(2 front wheels and 2 back wheels),wich are stadier and safer vehicles. Both the System(A+D+X)and the System(P+D+X)(1/2=Fig:1,2,3 and 2/2=Fig:1,2) include in Front : the main forkSyst(A)+the inclining parallelogramSyst(D) with its 2 axes-Syst(X) grafted to their 2dual-joint(Z)+the 2 steering axlesSyst('C),externally anchored to incli-ning parallelogramSyst(D), are attached into the2 forks/wheelsSyst(F+R).The (M)handle-bar on Top, by various driving leveragesSyst(E), controls the steering, the inclining and braking in both (tri./.quadri)cycles. The main forkSyst(A), welded on top of the frameSyst(B) with its 2 narrow legs lying in the vertical motion plane, having or not inside the 2 shock-absorbers, supports the inclining parallelogramSyst(D) and its 2 axesSyst(X) grafted into 2.dual-joint(Z).

Both the Syst("A"+"D"+"X") and the Syst("P"+"D"+"X"), only for the quadricycle, includes

"Rear": the"second"main forkSyst("A"), wich hangs on the"second"inclining parallelogram-Syst("D")with its 2 other axesSyst("X")grafted into other 2.dual-joint("Z")+the 2 not-steering axlesSyst("'C"), externally anchored at the same inclining parallelogramSyst("D"), wich are attached into the 2 forks/wheelsSyst("F"+"R"). The 2 not-steering axlesSyst("C") attached into the 2 forks/wheelsSyst("F"+"R") incline obeying to (M)hand-bar. The"second"main fork-Syst("A")(with or without the 2 shock-absorbers on its 2 legs), likely the main forkSyst(A), supports the inclining parallelogramSyst("D") by its 2 orizzontal axesSyst("X")grafted into the 2 dual-joint("Z") lying on the vertical motion plane, hinging(Y) them at the 2 forkSyst("A")legs. The forkSyst("A") is welded-on the back of the frameSyst(B). The protagonist of the left/right inclinations, by the (M)handle-bar / frameSyst(B), is the inclining parallelogramSyst("D") and its 2 axesSyst("X")with the 2.dual-joint("Z"). The inclining parallelogramSyst("D") has 4 articu-lated sides, hinged(Y)toghether, to obtain the inclinability. The inclining parallelogramSyst("D") and its 2 axesSyst("X")with 2.dual-joint("Z") places between the 2 narrow legs of the main fork-Syst("A"). The 2 not-steering axelsSyst("C"),attached into the 2 forks/wheelsSyst("F"+"R") are mounted on the 2 opposite sides of the inclining parallelogramSyst("D").

In conclusion : in Front of the vehicles the 2 forks/wheelsSyst(F+R) must risult :

.1) parallel toward the motion direction, equidistant from the (M)handle-bar axle

.2) steerable through the driving (M)handle-bar leveragesSyst(E) toward the2 forks/wheelsSyst(F+R)

.3) inclinable simultaneously for the driving (M)handle-bar leveragesSyst(E) action

.4) absorbable only in case of the 2 forward shock-absorbers existence

In conclusion, "Rear"of the vehicles the 2 forks/wheelsSyst("F"+"R") must risult :

.1) parallel toward the motion direction (like point .1)

.2) not steerable

.3) inclinable (like point.3) .4) absorbable only in case of the existence of 2 rear shock-absorbers

Note:ForkSyst(A or"A") rides the Syst(D or"D"). ForkSyst(P or"P") is ridden from Syst(D or"D")

CLAIMS

1st- The first claim consists of a typical realization by precise sequences of pairing and assemblings(1/2=Fig :1a/3a and 2/2 Fig :1and 2) and by precise sequences of pairing and its sub-assemblings, like to the following points from A to C :

.- A- The main forkSyst(A) (having or not 2 telescopic shock-absorbers inside the 2 legs) is welded centrally on top of the frameSyst(B) with its 2 legs lying in the vertical motion plane.

.- B - The 'right and left' inclining parallelogramSyst(D), is crosswise mounted respect to its main forkSyst(A) and it's inside and made of 4 articulated sides(very large the top & bottom) hinging(Y) to obtain the inclinability. This inclining parallelogramSyst(D), with its 2 axesSyst(X) lying in the vertical motion plane wich are welded on the middle of the 2(larger top & botton) horizontal basis, the 2 axesSyst(X)having,at their ends,the2.dual-joint(Z), so the inclining parallelogramSyst(D) placed between the narrow 2 legs of the main forkSyst(A), uses those 2.dual-joint(Z) fixed internally on the 2 legs.

.- C - The 2 forks/wheelsSyst(F+R)with their 2 steering axlesSyst('C) up to the driving (M)handle-bar with the leveragesSyst(E),can steer and incline,either on the 'tri' or on the 'quadri'cycle also toghether to the usual breaking leverage actions; these 2 forks/wheelsSyst-(F+R) are both placed to the vertical opposite sides hinged(Y) to the incliningparallelogramSyst(D).

In conclusion - This "first claim"on the System must result the2 forks/wheelsSyst(F+R) for both the System(A+D+X) and the System(P+D+X) so that :

.a) parallel toward the motion direction, equidistant from the (M)handle-bar axel.

Note:ForkSyst(A), is built with its 2 narrow legs; outward of inclining parallelogramSyst(D)

Note:ForkSyst(P), is built with its 2 very narrow legs; inward of inclining parallelogramSyst(D)

Note:The back System("A"+"D"+"X") is like the front System(A+D+X),having behind the only inclinig 2 wheels,having or not the 2 telescopic shock-absorbers inside of the 2 narrow forkSyst("A")legs. This back System("A"+"D"+"X") is used to have a quadricycle.

.b) steerable through the driving (M)handle-bar leveragesSyst(E) toward the2 forks/wheelsSyst(F+R).

.c) inclinable simultaneously by the driving handle-bar(M) and the leveragesSyst(E) actions.

.d) absorbable only in case of the 2 forward shock-absorbers existence.

2nd-The second claim is on the back part of the vehicles and consists of a typical realization by precise sequences of pairing and assembling (1/2=Fig :1a/3a and 2/2 Fig :1and 2) and by precise sequences of pairing and its sub-assemblings,like the following points from"A"to"C":

.- "A"-The main forkSyst("A"),mounting or not the2 telescopic shock-absorbers inside the2 legs, is centrally welded on the back of the frameSyst(B)with its 2 legs lying on the vertical motion plane.

.- "B"-The inclining 'right and left' parallelogramSyst("D")is crosswise mounted respect to its main forkSyst("A") and is made of 2 horizontal articulated long and narrow sides on top and on bottom and of 2vertical articulated narrow sides hinged(Y) together to obtain the inclinability. This inclining parallelogramSyst("D") with its 2 axesSyst("X") crosswise welded in the middle of the2 longer horizontal sides on top and on bottom, lying on the vertical motion plane and having at their ends the2.dual-joint("Z") fixed internally to the2 legs,used to support the2 not-steering axlesSyst(C') and their forksSyst("F"+"R").

.- "C"-The 2 back forks/wheelsSyst("F"+"R") with their 2 not-steering axlesSyst("C") and combined to the breaking leveragesSyst("E") from the (M)handle-bar, is applied to the inclining parallelogramSyst("D").

In conclusion of the 2nd claim on the back System, the 2 forks/wheelsSyst("F"+"R") for the System("A"+"D"+"X") and or the System("P"+"D"+"X"), must be :

.a) parallel toward the motion direction, equidistant from the vertical frame(B) motion plane.

Note: With the entire inclining/steeringSystem, with 4 wheels, due to its typical realization by precise sequences of pairing in assembling and of pairing in its sub-assemblings, the vehicle in curve or in straight motion, has such a behavior that the 2 back forks/wheelsSyst-("F"+"R") follow the same kind of inclining, pass on the same drive tracing whithout sliding.

.b) inclinable simultaneously due to the driving (M)handle-bar and leveragesSyst(E) actions.

.c) absorbable only if the 2 back shock-absorbers exist inside the 2 pertinent legs.

3rd -The third claim of the System referring to the original functionality of the idea,according to the2 main forksSyst(A &"A"),having the2 double legs lying on the vertical motion plane, are welded centrally on top(A) and the other("A"),if there is,centrally on the back of the frameSyst(B). Then the2 articulated sub-assemblies 'inclining parallelogramSyst(D&"D")'are crosswise mounted respect to the 2 main forksSyst(A&"A"), so in this manner we obtain the inclining functionality and also the shock-absorbing functionality if there are the shock-absorbers.

In conclusion -This third claim means that: the Systems, lying on the vertical motion plane the2 main forkSyst(A & "A"for the quadricycle) welded forward on top(A) and ("A")on the back of the frameSystem(B) wich crosswise support the inclining parallelogramSyst(D & "D"), provide to support completely the 4 axlesSyst(C' & not-steering"C") and the forksSyst(F+R)& ("F"+"R").

About the shock-absorbers, they must be inside the legs of the 2 main forksSyst(A &"A" for the quadricycle).The downward absorbing-cylinders should support 'up & down' the double dual-joint(Z&"Z") with their axesSyst(X &"X")and support their inclining parallelogramSyst(D&"D"). In this way on top,on the (M)handle-bar and on the back of the frame(B), shock-absorbing will be very efficient.

4th - The fourth claim of the System(2/2 Fig.1 - or a)), referring to other kind of the inclining parallelogramSyst(D &"D") as the : with the articulated inclining parallelogramSyst(D &"D") made like following = " the2 horizontal plate sides(LX), hinged to other2 vertical plate sides(L)", where each other sub-assemblies remains inalterable, permitting the articulated inclining parallelogramSyst(D & "D") to do its regular 'right and left' inclining function.

5th - The fifth claim of the System (2/2 Fig.1 - or b).), referring to other kind of the inclining parallelogramSyst(D &"D") as the : with the articulated inclining parallelogramSyst(D &"D")

made like following = " the2 orizontal plate sides(LX), hinged to other2 vertical frames(TT)", where each other sub-assemblies remains inalterable, permitting the articulated inclining parallelogramSyst(D &"D") to do its regular 'right and left' inclining function. Or the same for System(2/2 Fig.1- or d)), with the inclining parallelogramSyst(D&"D") = "the 2 horizontal frames(TX), hinged to other 2 vertical frames(TT)".

6th - The sixth claim of the System(2/2 Fig.1- or C), referring to other kind of the inclining parallelogramSyst(D &"D") as the : with the articulated inclining parallelogramSyst(D &"D") made like following = "the2 horizontal sides are 2 crosses(XX),hinged to other2 vertical plate-sides(L)"; where each other sub-assemblies remains inalterable permitting the articulated inclining parallelogramSyst(D &"D") to do its regular 'right and left' inclining function.

7th-The seventh claim of the System(2/2 Fig.1- or d),referring to other kind of the inclining parallelogramSyst(D &"D") as the : with the articulated inclining parallelogramSyst(D &"D") made like following = "the2 horizontal sides are 2 frame-crosses(TX), hinged to other2 vertical frame-sides(TT)"; where each other sub-assemblies remains inalterable permitting the articulated inclining parallelogramSyst(D &"D") to do its regular 'right and left' inclining function.

8th - The eighth claim of the System(2/2 Fig.1- or e), referring to other kind of the inclining parallelogramSyst(D &"D") as the : with the articulated inclining parallelogramSyst(D &"D") made like following = "the 2 horizontal sides are crosses(X), hinged to other2 vertical sides(T)" where each other sub-assemblies remains inalterable permitting the articulated inclining parallelogramSyst(D &"D") to do its regular 'right and left' inclining function.

9th - The ninth claim of the System(2/2 Fig.1 and Fig.2), is the summary of the all previous claims and further other,referring to many other kinds of the incliningparallelogramSyst(D&"D") producing in other pairings, assemblings and sub-assemblings in various possible combinations either on "forwardSyst (A+D+X)&(P+D+X) like following :

Fig.1 a) " the 2 horizontal plate-sides(LX), hinged to other 2 vertical plate-sides(L) ",

or b) " the 2 horizontal plate-sides(LX), hinged to other 2 vertical double frames(TT) ",
or c)" the 2 horizontal sides are double crosses(XX), hinged to other 2 vertical plate-sides(L)",
or d) " the 2 horizontal double frame-crosses(TX), hinged to other 2 vertical frame-sides(TT)",
or e)"the 2 horizontal sides are crosses(X),hinged to other 2 vertical frames(T)",
or f) "the 2 horizontal sides are crosses(X), hinged to other 2 very tin vertical frames(T)",
or g) "the 2 horizontal sides are other crosses(X), hinged to other 2 particular vertical frames(T)",
or h) "the 2 horizontal sides are tiny crosses(X), hinged to other 2 particular vertical frames(S)",
Or on "backSyst ("A"+"D"+"X")&("P"+"D"+"X")" like following :
or i) "the 2 horizontal particular frames(T-X-T), hinged to other 2 particular vertical frames(T-X-T)",
or Etc.)" identically to the above-mentioned points with references to the constructive dispositions of the parallelogram components like following : to put components, more or less = (+ or -) tin, or in various combinations and pairings;some horizontal components like(LX) (XX) (TX) in pairing with vertical components like (L) (LX) (T or TT) to obtain identical applications".

10th-The tenth claim of the System(1/2 Fig.3. 3a / 3b),referring to other kind of the steering & not-steering axlesSyst(C & "C") and to the probable further not-forksSyst(F+R)&("F"+"R").

CONCLUDING : the vehicle built with 3 or 4 wheels is more stable when it is in stop mode, in straight motion, in curve and in bracking actions and also over the slippery or sandy roads.

The conclusions of all previous claims are summaryed in the last2 for the forksSyst(A&"A")and the forksSyst(P&"P") 'having or not inside the shock-absorbers' and for their parallelograms(D&"D").

Note : " The forksSyst(P&"P"), inside the inclining parallelogramSyst(D&"D")" has very narrow legs, almost coincident 'with or without the shock-absorbers' .

Note : In case of presence of the shock-absorbers inside the 2 legs of the forks(A&"A")& (P&"P"), their 2.dual-joint(Z&"Z") of their relative asses(X &"X") of their inclining parallelograms-Syst(D&"D") must X hinge with the downward absorbing-cylinders of the same shock-absorbers, so that shock-absorbing is very efficient.

Fig : 1

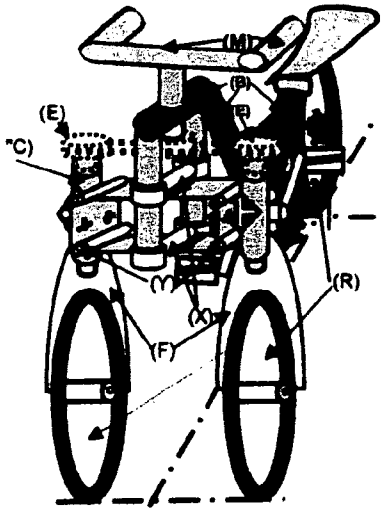


Fig : 1a

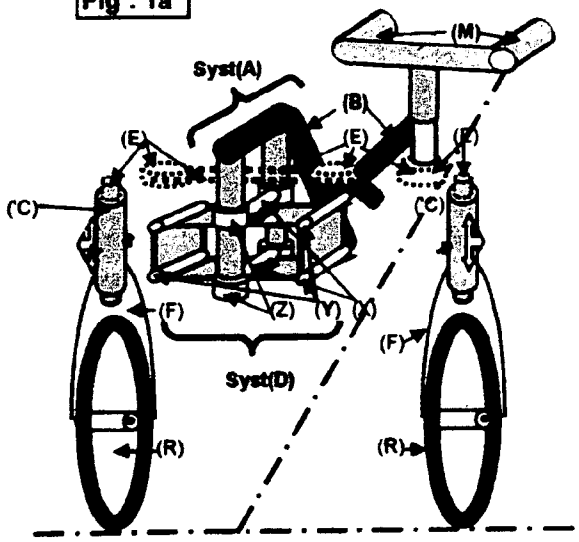


Fig : 2

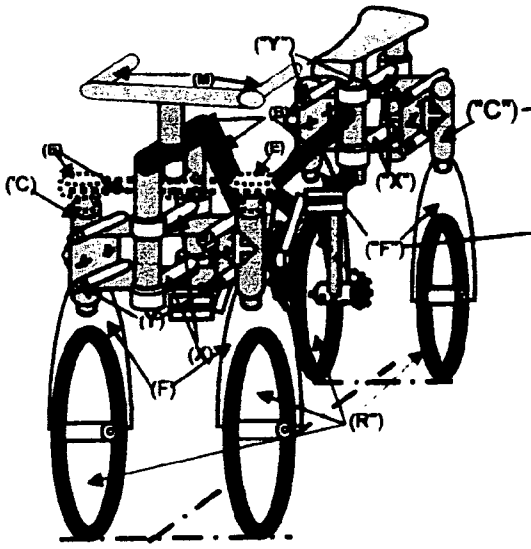


Fig:2b

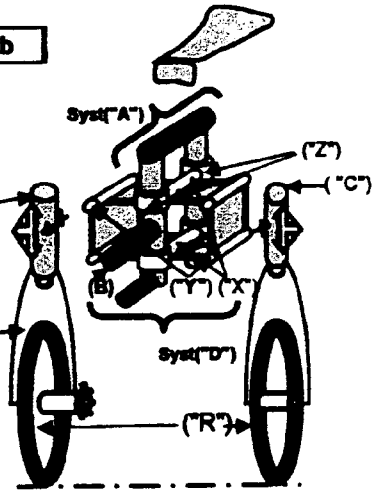


Fig : 3

Fig : 3a

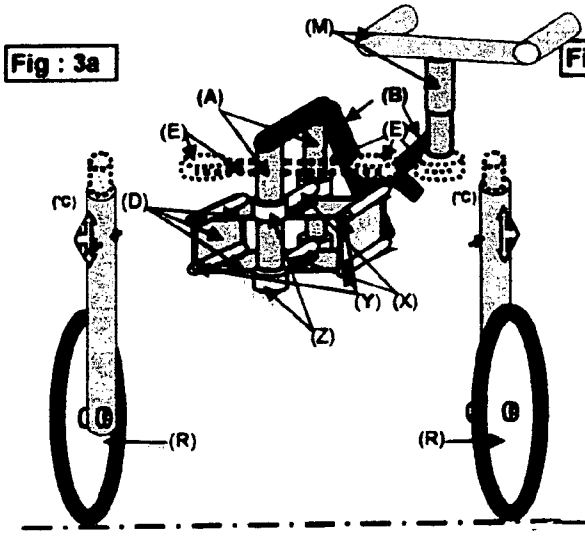
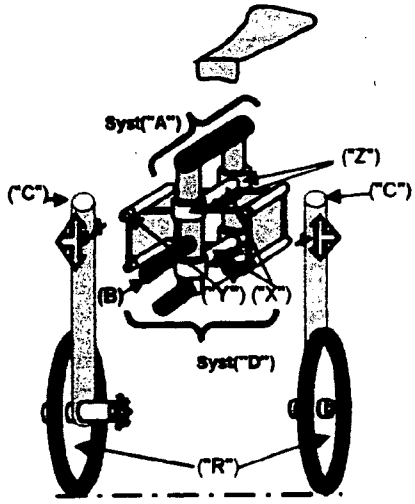


Fig : 3b



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Fig : 1

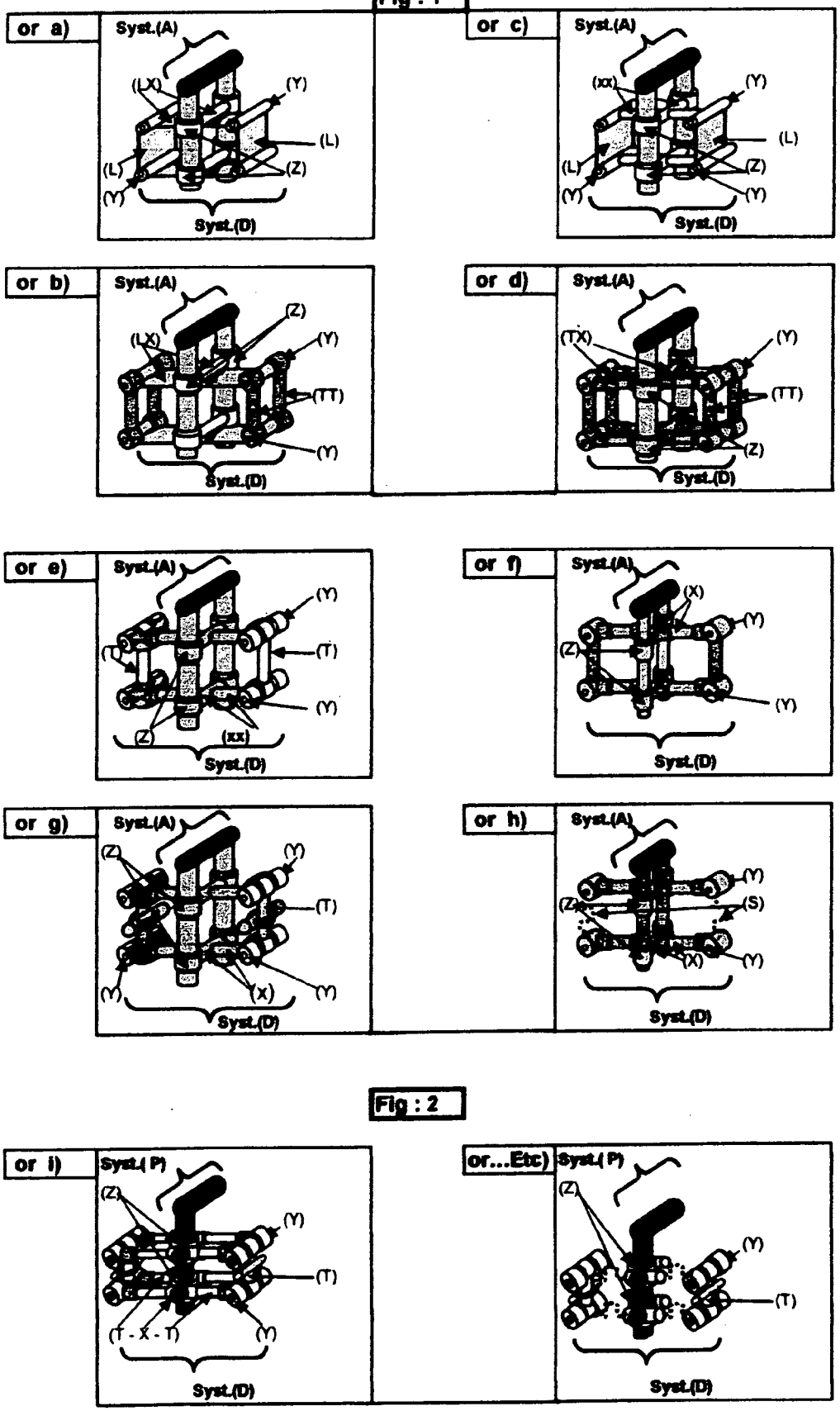

or a)
Syst.(A)
(LX)
(Y)
(L)
(L)
(Z)
(Y)
Syst.(D)
or c)
Syst.(A)
(xx)
(Y)
(L)
(L)
(Z)
(Y)
(Y)
Syst.(D)
or b)
Syst.(A)
(Z)
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(Y)
(TT)
(Y)
Syst.(D)
or d)
Syst.(A)
(TX)
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(Z)
Syst.(D)
or e)
Syst.(A)
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Syst.(D)
or h)
Syst.(A)
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(S)
(X)
(Y)
Syst.(D)

Fig : 2

or i)
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(T - X - T)
(Y)
Syst.(D)
or...Etc)
Syst.(P)
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Syst.(D)