The Principles

Isaac Newton and Eric Laithwaite gave us everything we need to transform our world of transport and transit forever; action equals reaction and the linear motor.

Apply both concepts to a torus and we can propel any vehicle anywhere around our planet and away from it, and, when used together with neutron energy and anti-drag, we can travel rapidly and safely for almost no cost.

This form of propulsion is silent, clean and reliable. It has only two moving parts, that operate in a perfect vacuum with no frictional resistance.

Its circular shape defines the design of mankind's only future form of transport and transit, and it was predicted almost a hundred years ago by many of our science fiction writers of the period.

Impulse Drive

The impulse drive is not only almost 100% efficient, it issues no exhaust.

It is a circular linear motor that propels a vehicle under constant acceleration (not constant velocity), massively reducing journey times; e.g. cross the Atlantic in 25-minutes and reach the moon in less than four hours.

There is almost nothing to go wrong.

Its simplicity is its greatest asset.

Once adopted, there will be no alternative propulsion system, simply because nothing else will be as quiet, reliable, efficient or cheap to run; it represents our inevitable future.

Title of the Invention:

The impulse drive.

Abstract:

The present invention relates to a universal means of propulsion using Isaac Newton's laws of orbital motion and action equals reaction, that will propel any mass (including a vehicle) under constant acceleration or constant velocity.

Cited Documents:

A: The safe and controlled release of neutron energy.

References:

The Mathematical Laws of Natural Science; Keith Dixon-Roche; ISBN 979-8-61029-449-0

Definitions:

By definition: **acceleration** shall mean the rate of change of velocity, for example; metres per second squared (m/s^2).

By definition: **force** shall mean an accelerating mass; force = mass multiplied by acceleration.

By definition: **torus** (①) shall mean a ring comprising a hollow tube of predominantly, but not necessarily entirely, constant cross-section that may be any shape. A circular cross-section is illustrated in FIG A.

By definition: **tori** shall mean more than one torus.

By definition: **bullet** (③) shall mean a mobile mass of magnetic material, of fixed polarity, inside the torus.

By definition: **electro-magnet** shall mean a magnet, the strength and polarity of which may be altered using electricity.

By definition: **magnetic ring** (②) shall mean an electro-magnet formed into a circular ring (or short tube), the polarity of which acts parallel to its central axis as illustrated in FIG B.

By definition: **tangential force** shall mean the tangential force in the bullet as it travels through the core of the torus (Fig D; F_B).

By definition: **driving force** (F) shall mean the force accelerating the torus in a given linear direction (FIG E).

By definition: **centrifugal force** (F_C) shall mean the centrifugal force in the bullet (FIG E).

By definition: **centripetal force** shall mean the centripetal force in the bullet.

By definition: **low-friction** shall mean negligible resistance between touching surfaces moving relative to each other, which may be achieved in the ID through plastics such as polytetrafluorethylene and its derivatives, or ball or roller bearings interspaced between the bullet(s) and the magnet(s).

By definition: **zero-friction** shall mean no resistance between adjacent surfaces moving relative to each other, which may be achieved by forced air or same-polarity magnetism.

By definition: an **ID** shall mean an assembly of one or two fully fitted (with magnets) tori that accommodate the requisite number of counter-rotating bullets to balance the driving forces.

By definition: an **IDV** shall mean a vehicle propelled by impulse drive.

By definition: a **propulsion-system** shall mean a mechanism for propelling a vehicle in a safe and controlled manner.

By definition: '**g**' shall mean the acceleration due to gravity at sea-level on the earth's surface (for example; $1g = 9.8066\ m/s^2$).

Description:

Isaac Newton originally explained the phenomena of orbits and action-reaction, which can be used to drive a body in any direction under constant acceleration, allowing us to overcome our planet's gravitational pull.

This can be achieved by accelerating a magnetic bullet through a particular angle (FIG C; α) inside a torus lined with magnetic rings that are energised similarly to a linear motor, whereby their polarities are repeatedly switched (reversed) in sequence to drive the bullet in a given direction. Whilst resistance between the bullet-magnet interface may be minimised with low-friction or even zero-friction options, the centrifugal force in the accelerating bullet will be transmitted through the magnetic rings and into the torus, forcing the torus to move in the direction of the centrifugal force.

If two identical bullets are driven diametrically opposite each other (FIG E) in different tori, or different compartments in the same torus, the driving force in the ID can be controlled to induce acceleration in the tori in a specific direction. Note; the lateral forces will cancel out, whilst the longitudinal forces will act together.

The driving sequence operates as follows (FIG C):

1) the bullet is accelerated through angle α,
2) the bullet is decelerated through angle β',
3) the bullet is accelerated through angle α,
4) the bullet is decelerated through angle β',
5) and so forth.

FIG E: The driving force comes from the combined centrifugal forces, which is why it varies from zero at point 'P' to a maximum at point 'M'.

The centrifugal force in the accelerating bullet becomes centripetal force under deceleration. Therefore, the forward momentum in the torus achieved with each impulse through angle α, will not be significantly affected by the bullet's deceleration through angle β'. Moreover, with sufficient initial velocity (v_1), the sequence of impulses will feel like constant acceleration in the torus.

The driving force is derived from the triangle of forces in the bullet's tangential force and increases as the bullet accelerates between points 'N' and 'M' (α).

The bullet's deceleration between 'M' and 'N' (β') may be achieved with a combination of natural means and deliberate means using the magnetic rings until initial velocity (v_1) has again been reached at 'N'.

Whilst the driving force induced by an ID is pulsating, its frequency will be such that it will appear continuous to its wearer;
for example, the ID described in the ID performance calculation below, induces a 20-millisecond impulse every 84 milliseconds, which to all intent and purpose, may be deemed continuous.

Calculations:

'θ' is the positional angle of the bullet (through α)

FIG E: The magnetic rings accelerate the bullet through angle 'α' inducing in it a centrifugal force; 'F_C' according to the following:

Bullet:

mass = 'm_B'

initial velocity = 'v_1'

final velocity = 'v_2'

$F_C = m_B.v_2 / R$

$F_h = F_C.Cos(θ)$

$F_1 = F_C.Sin(θ)$

F_h in counter-rotating bullets will cancel out.

The driving force in two counter-rotating Bullets will be; $2.F_1$ (2 bullets)

FIG D: An additional force (F_2) will be induced in the torus as a result of the relative direction of the Bullet's acceleration (a_B) over angle α, the value of which - along with the magnitude of the reaction from the torus - will be dependent upon the selected bullet guidance system; magnets, ball-race, bush, etc.

driven-distance; $\ell = α.R$

acceleration; $a_B = (v_2^2 - v_1^2) / 2.\ell$

$F_a = m_B.a_B$

$F_h = F_a.Cos(θ)$

$F_2 = F_a.Sin(θ)$

F_h in counter-rotating bullets will cancel out.

The driving force in two counter-rotating Bullets will be; $2.F_2$ (2 bullets)

The total driving force is; $F = 2F_1 + 2F_2$

Because the deceleration forces will be insufficient to reverse the ID, it will continue to accelerate with each successive impulse.

The following variables may be adjusted to optimise performance, stability and energy consumption:

R, m_B, v_1, v_2, α

ID Performance:

			δθ	α^c	d	a_B	v_B	t	Fc	2F	F_B	2F	F_T	a	v	d	F
g	9.80663139	m/s²	0	0	0	6227.8021	100	0	20000	14334.71798	24911.208	17854.75741	32189.47539	32.18947539	0		
m_B	4	kg	1	0.0174533	0.0349066	6227.8021	102.15078	0.0003454	20869.565	15635.75346	24911.208	18663.8059	34299.55936	34.29955936	0.0118454	2.04542E-06	34299.559
R	2	m	2	0.0349066	0.0698132	6227.8021	104.25721	0.0003382	21739.13	16988.30993	24911.208	19467.16921	36455.47914	36.45547914	0.0241757	6.0917E-06	36455.479
α	69	°	3	0.0523599	0.1047198	6227.8021	106.32191	0.0003315	22608.696	18391.56995	24911.208	20264.60263	38656.17258	38.65617258	0.0369914	1.01393E-05	38656.173
	1.204277184	c	4	0.0698132	0.1396263	6227.8021	108.34727	0.0003252	23478.261	19844.68359	24911.208	21055.86325	40900.54685	40.90054685	0.0502928	1.4193E-05	40900.547
v_{Bo}	100	m/s	5	0.0872665	0.1745329	6227.8021	110.33546	0.0003192	24347.826	21346.76889	24911.208	21840.71006	43187.47895	43.18747895	0.0640801	1.82564E-05	43187.479
v_{Bf}	200	m/s	6	0.1047198	0.2094395	6227.8021	112.28845	0.0003136	25217.391	22896.91216	24911.208	22618.90398	45515.81614	45.51581614	0.0783535	2.23331E-05	45515.816
m	1000	kg	7	0.122173	0.2443461	6227.8021	114.20805	0.0003082	26086.957	24494.16849	24911.208	23390.20796	47884.37645	47.88437645	0.093113	2.64256E-05	47884.376
			8	0.1396263	0.2792527	6227.8021	116.09591	0.0003031	26956.522	26137.56214	24911.208	24154.38705	50291.94918	50.29194918	0.1083582	3.05365E-05	50291.949
β	21	°	9	0.1570796	0.3141593	6227.8021	117.95356	0.0002983	27826.087	27826.08696	24911.208	24911.20848	52737.29544	52.73729544	0.1240889	3.46676E-05	52737.295
	0.366519143	c	10	0.1745329	0.3490659	6227.8021	119.78241	0.0002937	28695.652	29558.70691	24911.208	25660.44172	55219.14863	55.21914863	0.1403045	3.88207E-05	55219.149
C	12.56637061	m	11	0.1919862	0.3839724	6227.8021	121.58375	0.0002892	29565.217	31334.35649	24911.208	26401.85854	57736.21504	57.73621504	0.1570042	4.2997E-05	57736.215
d	2.408554368	m	12	0.2094395	0.418879	6227.8021	123.35879	0.000285	30434.783	33151.94126	24911.208	27135.2331	60287.17436	60.28717436	0.1741871	4.71978E-05	60287.174
a_B	6227.802121	m/s²	13	0.2268928	0.4537856	6227.8021	125.10865	0.000281	31304.348	35010.3383	24911.208	27860.342	62870.68031	62.87068031	0.1918522	5.1424E-05	62870.68
$\hat{a}_B$	-1476.695348	m/s²	14	0.2443461	0.4886922	6227.8021	126.83437	0.0002771	32173.913	36908.39677	24911.208	28576.96437	65485.36115	65.48536115	0.2099982	5.56762E-05	65485.361
			15	0.2617994	0.5235988	6227.8021	128.53692	0.0002734	33043.478	38844.93841	24911.208	29284.88193	68129.82034	68.12982034	0.2286234	5.9955E-05	68129.82
d	0.155917656	m	16	0.2792527	0.5585054	6227.8021	130.21721	0.0002698	33913.043	40818.75809	24911.208	29983.87902	70802.63711	70.80263711	0.2477263	6.42608E-05	70802.637
t	0.083775804	s	17	0.296706	0.5934119	6227.8021	131.87609	0.0002664	34782.609	42828.62437	24911.208	30673.74273	73502.36711	73.50236711	0.267305	6.85938E-05	73502.367
v_f	1.86112993	m/s	18	0.3141593	0.6283185	6227.8021	133.51437	0.0002631	35652.174	44873.28006	24911.208	31354.26293	76227.54299	76.22754299	0.2873573	7.29543E-05	76227.543
a	11.10780106	m/s²	19	0.3316126	0.6632251	6227.8021	135.13278	0.0002599	36521.739	46951.44279	24911.208	32025.23231	78976.67511	78.97667511	0.3078809	7.73421E-05	78976.675
	1.132682632	g	20	0.3490659	0.6981317	6227.8021	136.73205	0.0002568	37391.304	49061.80565	24911.208	32686.4465	81748.25214	81.74825214	0.3288733	8.17572E-05	81748.252
			21	0.3665191	0.7330383	6227.8021	138.31281	0.0002538	38260.87	51203.0377	24911.208	33337.70408	84540.74178	84.54074178	0.3503319	8.61995E-05	84540.742
Bullet	15.91549431	c/s	22	0.3839724	0.7679449	6227.8021	139.87572	0.000251	39130.435	53373.7847	24911.208	33978.80667	87352.59137	87.35259137	0.3722536	9.06687E-05	87352.591
			23	0.4014257	0.8028515	6227.8021	141.42136	0.0002482	40000	55572.66964	24911.208	34609.55898	90182.22862	90.18222862	0.3946353	9.51644E-05	90182.229
Energy consumption per torus pair:			24	0.418879	0.837758	6227.8021	142.95028	0.0002455	40869.565	57798.29342	24911.208	35229.76889	93028.06231	93.02806231	0.4174736	9.96863E-05	93028.062
E	1.63786E-13	J/n	25	0.4363323	0.8726646	6227.8021	144.46302	0.0002429	41739.13	60049.23551	24911.208	35839.24747	95888.48298	95.88848298	0.4407651	0.000104234	95888.483
Ea	60000	J	26	0.4537856	0.9075712	6227.8021	145.96009	0.0002404	42608.696	62324.05457	24911.208	36437.80907	98761.86365	98.76186365	0.4645059	0.000108806	98761.864
Eâ	-60000	J	27	0.4712389	0.9424778	6227.8021	147.44196	0.0002379	43478.261	64621.28917	24911.208	37025.27136	101646.5605	101.6465605	0.4886921	0.000113404	101646.56
E_T	240000	J	28	0.4886922	0.9773844	6227.8021	148.90908	0.0002356	44347.826	66939.45842	24911.208	37601.4554	104540.9138	104.5409138	0.5133194	0.000118025	104540.91
rock	3.03185E+26	n/kg	29	0.5061455	1.012291	6227.8021	150.36188	0.0002333	45217.391	69277.06268	24911.208	38166.18566	107443.2483	107.4432483	0.5383835	0.000122669	107443.25
iron	3.19614E+26	n/kg	30	0.5235988	1.0471976	6227.8021	151.80078	0.000231	46086.957	71632.58427	24911.208	38719.29014	110351.8744	110.3518744	0.5638797	0.000127336	110351.87
U_{235}	3.66585E+26	n/kg	31	0.5410521	1.0821041	6227.8021	153.22618	0.0002289	46956.522	74004.48816	24911.208	39260.60034	113265.0885	113.2650885	0.5898033	0.000132025	113265.09
rock	4.8331306E-09	kg/c	32	0.5585054	1.1170107	6227.8021	154.63843	0.0002268	47826.087	76391.2227	24911.208	39789.95139	116181.1741	116.1811741	0.6161492	0.000136734	116181.17
iron	4.5846932E-09	kg/c	33	0.5759587	1.1519173	6227.8021	156.0379	0.0002247	48695.652	78791.22032	24911.208	40307.18203	119098.4023	119.0984023	0.6429123	0.000141464	119098.4
U_{235}	3.9972434E-09	kg/c	34	0.5934119	1.1868239	6227.8021	157.42493	0.0002227	49565.217	81202.8983	24911.208	40812.13471	122015.033	122.015033	0.6700869	0.000146213	122015.03
rock	3.0997969E-05	kg/km	35	0.6108652	1.2217305	6227.8021	158.79985	0.0002208	50434.783	83624.65949	24911.208	41304.65562	124929.3151	124.9293151	0.6976677	0.00015098	124929.32
iron	2.9404580E-05	kg/km	36	0.6283185	1.2566371	6227.8021	160.16296	0.0002189	51304.348	86054.89306	24911.208	41784.59473	127839.4878	127.8394878	0.7256486	0.000155765	127839.49
U_{235}	2.5636888E-05	kg/km	37	0.6457718	1.2915436	6227.8021	161.51457	0.000217	52173.913	88491.97525	24911.208	42251.80586	130743.7811	130.7437811	0.7540237	0.000160565	130743.78
rock	32260.17859	km/kg	38	0.6632251	1.3264502	6227.8021	162.85496	0.0002152	53043.478	90934.27016	24911.208	42706.14667	133640.4168	133.6404168	0.7827868	0.000165382	133640.42
iron	34008.30787	km/kg	39	0.6806784	1.3613568	6227.8021	164.18441	0.0002135	53913.043	93380.1305	24911.208	43147.47877	136527.6093	136.5276093	0.8119314	0.000170212	136527.61
U_{235}	39006.29492	km/kg	40	0.6981317	1.3962634	6227.8021	165.50319	0.0002118	54782.609	95827.89835	24911.208	43575.66774	139403.5661	139.4035661	0.8414509	0.000175056	139403.57
			41	0.715585	1.43117	6227.8021	166.81153	0.0002101	55652.174	98275.90599	24911.208	43990.58313	142266.4891	142.2664891	0.8713384	0.000179913	142266.49
Energy consumption per IDV:			42	0.7330383	1.4660766	6227.8021	168.1097	0.0002084	56521.739	100722.4766	24911.208	44392.09857	145114.5752	145.1145752	0.901587	0.00018478	145114.58
rock	0.896116072	yr/kg	43	0.7504916	1.5009832	6227.8021	169.39791	0.0002068	57391.304	103165.9253	24911.208	44780.09174	147946.0171	147.9460171	0.9321896	0.000189658	147946.02
iron	0.944675219	yr/kg	44	0.7679449	1.5358897	6227.8021	170.6764	0.0002053	58260.87	105604.5595	24911.208	45154.44447	150759.004	150.759004	0.9631386	0.000194544	150759
U_{235}	1.083508192	yr/kg	45	0.7853982	1.5707963	6227.8021	171.94539	0.0002038	59130.435	108036.6802	24911.208	45515.04271	153551.7229	153.5517229	0.9944265	0.000199438	153551.72
			46	0.8028515	1.6057029	6227.8021	173.20508	0.0002023	60000	110460.5824	24911.208	45861.77663	156322.359	156.322359	1.0260456	0.000204339	156322.36
			47	0.8203047	1.6406095	6227.8021	174.45568	0.0002008	60869.565	112874.5562	24911.208	46194.54061	159069.0968	159.0690968	1.057988	0.000209246	159069.1
			48	0.837758	1.6755161	6227.8021	175.69737	0.0001994	61739.13	115276.8874	24911.208	46513.23328	161790.1207	161.7901207	1.0902456	0.000214156	161790.12
			49	0.8552113	1.7104227	6227.8021	176.93035	0.000198	62608.696	117665.8586	24911.208	46817.75757	164483.6162	164.4836162	1.12281	0.00021907	164483.62
			50	0.8726646	1.7453293	6227.8021	178.15479	0.0001966	63478.261	120039.7496	24911.208	47108.02072	167147.7703	167.1477703	1.1556729	0.000223986	167147.77
			51	0.8901179	1.7802358	6227.8021	179.37088	0.0001953	64347.826	122396.8386	24911.208	47383.93431	169780.7729	169.7807729	1.1888256	0.000228902	169780.77
			52	0.9075712	1.8151424	6227.8021	180.57878	0.000194	65217.391	124735.403	24911.208	47645.4143	172380.8173	172.3808173	1.2222593	0.000233818	172380.82
			53	0.9250245	1.850049	6227.8021	181.77865	0.0001927	66086.957	127053.7198	24911.208	47892.38103	174946.1008	174.9461008	1.2559651	0.000238732	174946.1
			54	0.9424778	1.8849556	6227.8021	182.97066	0.0001914	66956.522	129350.0672	24911.208	48124.75928	177474.8265	177.4748265	1.2899338	0.000243643	177474.83
			55	0.9599311	1.9198622	6227.8021	184.15494	0.0001902	67826.087	131622.7246	24911.208	48342.47826	179965.2029	179.9652029	1.3241563	0.00024855	179965.2
			56	0.9773844	1.9547688	6227.8021	185.33167	0.0001889	68695.652	133869.9741	24911.208	48545.47165	182415.4458	182.4154458	1.358623	0.000253451	182415.45
			57	0.9948377	1.9896753	6227.8021	186.50096	0.0001878	69565.217	136090.101	24911.208	48733.67762	184823.7786	184.8237786	1.3933245	0.000258345	184823.78

The ID (vehicle) specified in the above spreadsheet calculation …
diameter: five-metres
bullet mass: four-kilograms
average bullet velocity: 150 metres per second
vehicle mass: one-tonne
… accelerates at 1.132g, enabling it to oppose gravitational acceleration.

Fuel consumption based upon neutron energy (cited document A): Rock; 0.031 grams per kilometre

It should be noted here, that the energy expended driving the above ID (vehicle) is higher than that indicated in ‘cited document A; FIG ①’ for a family saloon, because the above ID (vehicle) includes the energy required for levitation during travel and accelerates continually during its journey; unlike a family saloon car, which spends very little time under acceleration at or close to ‘1g’ ($9.81 m/s^2$).

Design Options:

There are a number of ways to incorporate counter-rotating Bullets in an impulse-drive assembly, some of which are shown below:

Option 1: Covers counter-rotating bullets in separate tori (FIG G);

1a; is the simplest arrangement but will result in torsional forces between the two tori;

1b; is an improved version of 1a (above), but will require dissimilar bullet masses to balance the otherwise differing centrifugal forces between the inner and outer tori;

1c; is an improved version of 1b (above), in that the different centrifugal forces between the inner and outer tori will be more easily matched and torsional forces reduced.

Option 2: Covers counter-rotating bullets in the same torus (FIG G);

2a; Allows for both counter-rotating bullets to be incorporated into a single torus. However, like 1a (above), there will be a torsional force between the two bullets;

2b; Is an improvement over 2a (above) in that correct bullet mass allocation will eliminate all torsional forces.

Options 3: Covers additional potential improvements to the basic design;

3a; Extraction of the entrained air within tori fitted with low-friction and zero-friction devices using magnets, will significantly reduce the energy expended in driving an ID.

3b; The use of multiple bullets running together in a single torus (FIG F), the relative velocities of which may be controlled to maintain balance and avoid interference, the advantage of which would be to increase the impulse rate and decrease the intervening deceleration periods. This will result in IDs that are lighter in weight than the single-bullet option.

Benefits:

1) An ID is simple to operate - computer software will shift the angular position (between 0° and 360°), and magnitude (between 0° and 180°) of 'α'.
2) Each ID comprises only three major components; torus (tori), bullets and a set of identical magnetic rings, making design, manufacture and future development uniquely simple for a propulsion-system.
3) There are only two (or three) moving parts (two or three bullets) in an ID, minimising wear and consequential maintenance.
4) Because an ID has no operational inlet or exhaust requirements, it can be sealed and therefore isolated from the effects of external contaminants.
5) In zero-friction systems, there will be zero wear.
6) Zero-friction IDs will be silent.
7) Because temperature variation does not impair magnets operationally, an ID will be more versatile and reliable in hostile environments than existing propulsion systems, making it suitable for use in, for example; outer space; polar regions; deserts; etc.
8) IDs generate no exhausted waste matter.
9) IDs can be manufactured any size, making them suitable for personal (individual) transport, e.g.; in the form of a belt.
10) Given its ability to oppose gravitational acceleration, an ID releases travel from the limitations imposed by, road, rail and sea.
11) Travelling under constant acceleration significantly reduces travel time. For example: it takes eight-hours to travel between London and New York at 700km/hr. At 1g, this journey-time would be reduced to twenty-five minutes.
12) Because an ID can be used in outer-space, and because it operates under constant acceleration, our moon can be reached in three and a half hours and Mars in three-days, whilst accelerating and decelerating at just 1g.

To summarise; the ID is quiet, safe, fast, clean, reliable and offers a long operational life.

Figures:

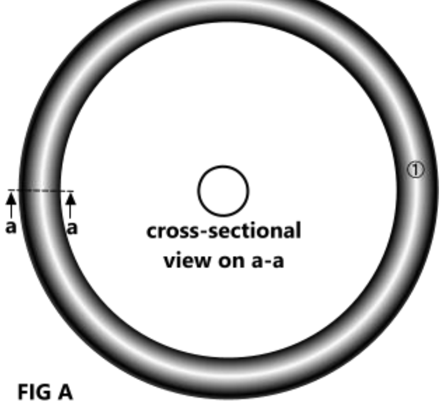

FIG A

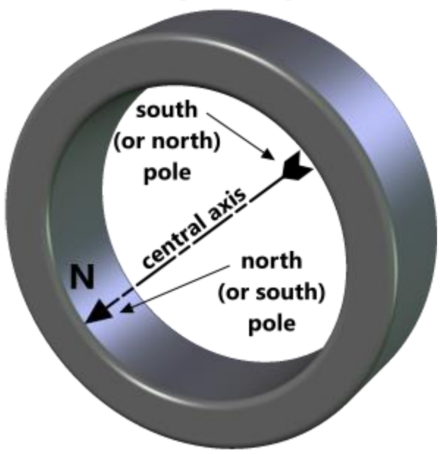

FIG B

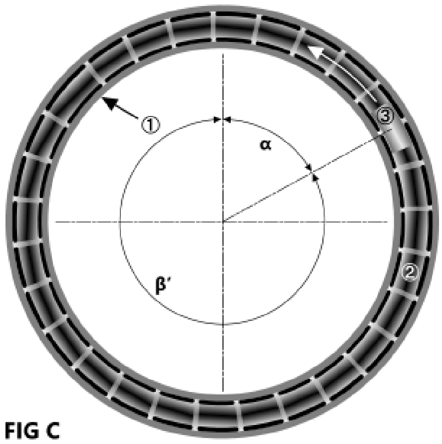

FIG C

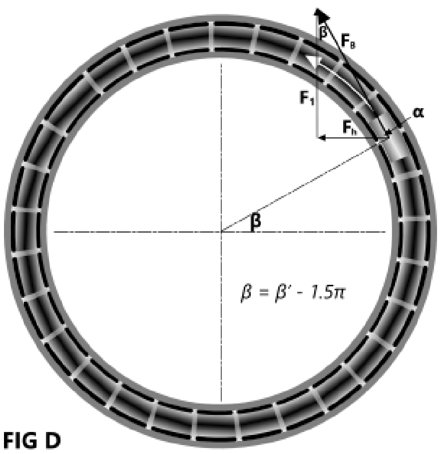

FIG D

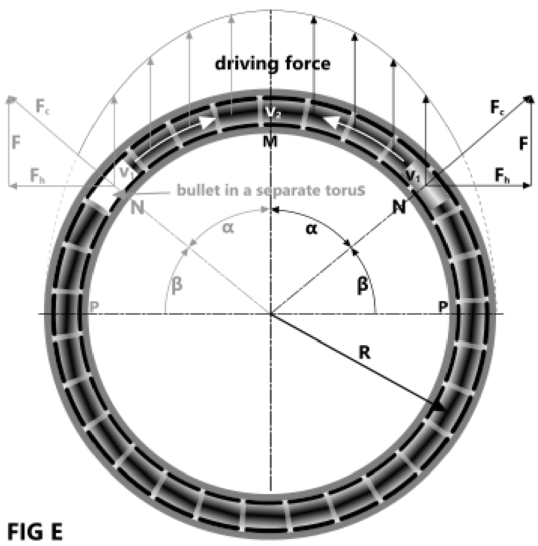

FIG E

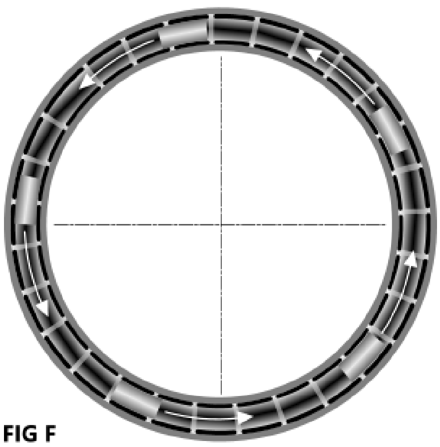

FIG F

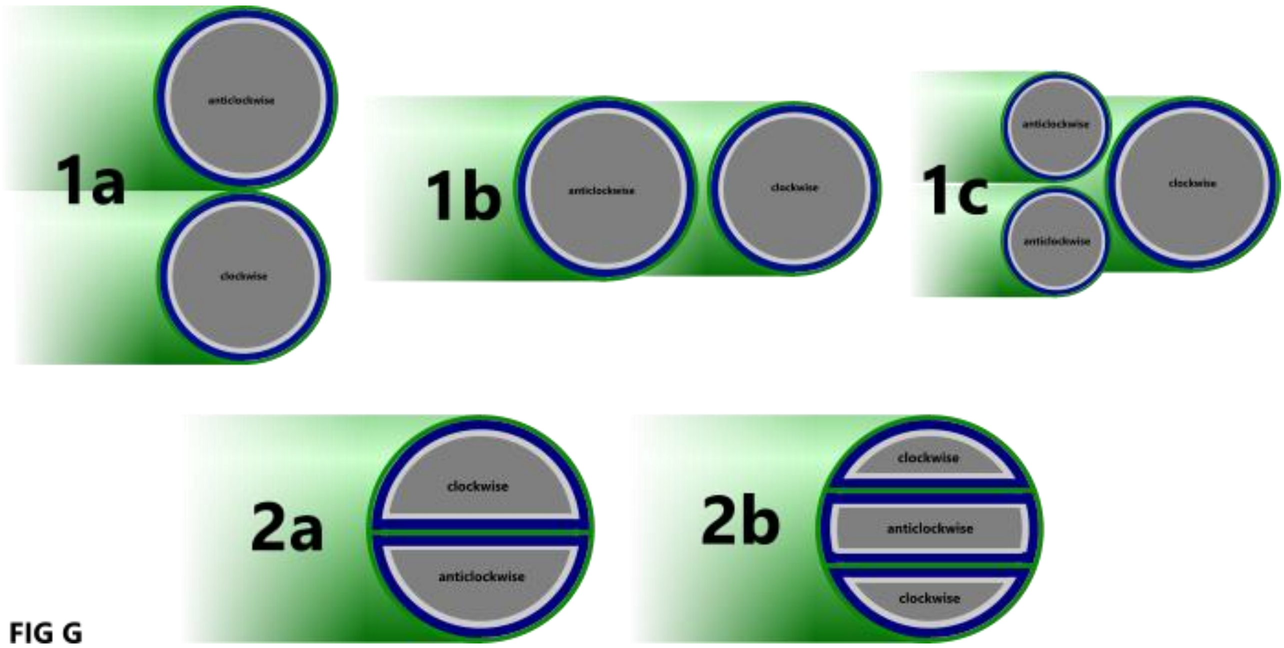
1a
anticlockwise
clockwise
1b
anticlockwise
clockwise
1c
anticlockwise
anticlockwise
clockwise
2a
clockwise
anticlockwise
2b
clockwise
anticlockwise
clockwise

FIG G

Claims:

Refer to **Definitions** for a definition of the terms used in these claims.

1. A propulsion system that operates by accelerating one or more bullets inside a torus, using electro-magnets.

2. A propulsion system that operates by accelerating and decelerating one or more bullets inside a torus, using electro-magnets.

3. A propulsion system that operates by accelerating one or more bullets inside a torus, using electro-magnets and utilising low-friction elements to minimise wear between the bullet and the electro-magnets.

4. A propulsion system that operates by accelerating and decelerating one or more bullets inside a torus, using electro-magnets and utilising low-friction elements to minimise wear between the bullet and the electro-magnets.

5. A propulsion system that operates by accelerating one or more bullets inside a torus, using electro-magnets and utilising zero-friction (magnetism) to eliminate wear between the bullet and the electro-magnets.

6. A propulsion system that operates by accelerating and decelerating one or more bullets inside a torus, using electro-magnets and utilising zero-friction (magnetism) to eliminate wear between the bullet and the electro-magnets.

7. A propulsion system that operates by accelerating one or more bullets inside a torus, using electro-magnets and utilising low friction or zero-friction (magnetism) to minimise or eliminate wear between the bullet and the electro-magnets, and extracting air within the circular structure to create a partial vacuum.

8. A propulsion system that operates by accelerating and decelerating one or more bullets inside a torus, using electro-magnets and utilising low friction or zero-friction (magnetism) to minimise or eliminate wear between the bullet and the electro-magnets, and extracting air within the circular structure to create a partial vacuum.

9. A propulsion system that operates by accelerating one or more bullets inside a torus, using electro-magnets and utilising low friction or zero-friction (magnetism) to minimise or eliminate wear between the bullet and the electro-magnets, and extracting air within the circular structure to create a full vacuum.

10. A propulsion system that operates by accelerating and decelerating one or more bullets inside a torus, using electro-magnets and utilising low friction or zero-friction (magnetism) to minimise or eliminate wear between the bullet and the electro-magnets, and extracting air within the circular structure to create a full vacuum.