CLAIMS

1. An assembly comprising:

a tube with an inner and outer wall and a void therein, and

a cylinder, the cylinder moving relative to the tube in an axial translation into and out of the tube void and rotationally relative to tube,

a shaft that the cylinder rotates around;

wherein the tube, cylinder and shaft share a common central axis of rotation; wherein the tube and cylinder comprise one or more conductive members and magnetic members, configured so that, when the tube and cylinder have different relative speeds of rotation, eddy current drag forces are produced between the members resisting relative rotation between the tube and cylinder when the tube and cylinder overlap;

wherein axial movement of the cylinder is urged by an axial force imposed on the cylinder as a reaction to a rotational torque imposed on the shaft; and

when the cylinder and tube magnets and conductors interact together due to an overlap and different relative speeds of rotation to each other, an eddy current braking force is induced against different relative speed of motion of the tube and cylinder with a modulation of braking force arising due to a balance of the forces on the tube and cylinder caused by both rotational movement and axial movement of the tube and cylinder along the longitudinal axis to an equilibrium position of the tube and cylinder axially and rotationally to provide a controlled eddy current induced braking torque, wherein the tube rotates in a counter rotational direction to the cylinder and, as a result of axial translation of the cylinder, overlap between the tube and cylinder, and counter rotation, eddy current forces are generated between the tube and cylinder creating a drag force on rotation of the tube and cylinder thereby causing the relative speed of rotation of the tube and cylinder to reduce.

2. The assembly as claimed in claim 1 wherein the conductive member(s) is/are on the tube or the tube itself is a conductive member and the magnetic member(s) are on the cylinder or the cylinder itself is a magnetic member.

3. The assembly as claimed in claim 1 wherein the conductive member(s) is/are on the cylinder or the cylinder itself is a conductive member and the magnetic member(s) are on the tube or the tube itself is a magnetic member.

4. The assembly as claimed in claim 1 wherein, prior to axial movement of the cylinder, the tube and the cylinder completely or partly overlap each other.

5. The assembly as claimed in claim 1 wherein prior to axial movement of the cylinder, the tube and the cylinder do not overlap each other.

6. An assembly comprising:

a tube with an inner and outer wall and a void therein, and

a cylinder, the cylinder moving relative to the tube in an axial translation into and out of the tube void and rotationally relative to tube,

a shaft that the cylinder rotates around;

wherein the tube, cylinder and shaft share a common central axis of rotation;

wherein the tube and cylinder comprise one or more conductive members and magnetic members, configured so that, when the tube and cylinder have different relative speeds of rotation, eddy current drag forces are produced between the members resisting relative rotation between the tube and cylinder when the tube and cylinder overlap;

wherein axial movement of the cylinder is urged by an axial force imposed on the cylinder as a reaction to a rotational torque imposed on the shaft; and

when the cylinder and tube magnets and conductors interact together due to an overlap and different relative speeds of rotation to each other, an eddy current braking force is induced against different relative speed of motion of the tube and cylinder with a modulation of braking force arising due to a balance of the forces on the tube and cylinder caused by both rotational movement and axial movement of the tube and cylinder along the longitudinal axis to an equilibrium position of the tube and cylinder axially and rotationally to provide a controlled eddy current induced braking torque;

wherein the shaft is attached to a spool of line to which an object is attached and, as a torque force is applied on the line and spool, line is paid out from the spool causing rotation of the spool and shaft leading to cylinder rotation and subsequent axial movement into the tube void thereby causing an eddy current brake interaction between the cylinder and tube and thereby slowing cylinder rotation and hence pay out of line from the spool.

7. The assembly as claimed in claim 6 wherein the conductive member(s) is/are on the tube or the tube itself is a conductive member and the magnetic member(s) are on the cylinder or the cylinder itself is a magnetic member.

8. The assembly as claimed in claim 6 wherein the conductive member(s) is/are on the cylinder or the cylinder itself is a conductive member and the magnetic member(s) are on the tube or the tube itself is a magnetic member.

9. The assembly as claimed in claim 6 wherein, prior to axial movement of the cylinder, the tube and the cylinder completely or partly overlap each other.

10. The assembly as claimed in claim 6 wherein prior to axial movement of the cylinder, the tube and the cylinder do not overlap each other.

11. The assembly as claimed in claim 6 wherein the tube is fixed against rotation, the cylinder rotates, and as a result of axial translation of the cylinder, overlap between the tube and cylinder, and differing relative speeds of rotation, eddy current forces are generated between the tube and cylinder creating a drag force on rotation of the cylinder thereby causing the cylinder speed of rotation to reduce.

12. The assembly as claimed in claim 6 wherein the tube rotates in the same direction as the cylinder but at a different relative speed to the cylinder and, as a result of axial translation of the cylinder, overlap between the tube and cylinder, and differing relative speeds of rotation, eddy current forces are generated between the tube and cylinder creating a drag force on rotation of the tube and/or cylinder thereby causing the relative speed of rotation of the tube and cylinder to reduce.

13. An assembly comprising:

a tube with an inner and outer wall and a void therein, and wherein the tube comprises multiple concentric walls;

a cylinder, the cylinder moving relative to the tube in an axial translation into and out of the tube void and rotationally relative to tube, the tube comprising complementary wall openings, with the multiple concentric walls of the tube nesting within the complementary concentric wall openings of the cylinder;

a shaft that the cylinder rotates around;

wherein the tube, cylinder and shaft share a common central axis of rotation;

wherein the tube and cylinder comprise one or more conductive members and magnetic members, configured so that, when the tube and cylinder have different relative speeds of rotation, eddy current drag forces are produced between the members resisting relative rotation between the tube and cylinder when the tube and cylinder overlap;

wherein axial movement of the cylinder is urged by an axial force imposed on the cylinder as a reaction to a rotational torque imposed on the shaft; and

when the cylinder and tube magnets and conductors interact together due to an overlap and different relative speeds of rotation to each other, an eddy current braking force is induced against different relative speed of motion of the tube and cylinder with a modulation of braking force arising due to a balance of the forces on the tube and cylinder caused by both rotational movement and axial movement of the tube and cylinder along

the longitudinal axis to an equilibrium position of the tube and cylinder axially and rotationally to provide a controlled eddy current induced braking torque.

14. The assembly as claimed in claim 13 wherein the conductive member(s) is/are on the tube or the tube itself is a conductive member and the magnetic member(s) are on the cylinder or the cylinder itself is a magnetic member.

15. The assembly as claimed in claim 13 wherein the conductive member(s) is/are on the cylinder or the cylinder itself is a conductive member and the magnetic member(s) are on the tube or the tube itself is a magnetic member.

16. The assembly as claimed in claim 13 wherein, prior to axial movement of the cylinder, the tube and the cylinder completely or partly overlap each other.

17. The assembly as claimed in claim 13 wherein prior to axial movement of the cylinder, the tube and the cylinder do not overlap each other.

18. The assembly as claimed in claim 13 wherein the tube is fixed against rotation, the cylinder rotates, and as a result of axial translation of the cylinder, overlap between the tube and cylinder, and differing relative speeds of rotation, eddy current forces are generated between the tube and cylinder creating a drag force on rotation of the cylinder thereby causing the cylinder speed of rotation to reduce.

19. The assembly as claimed in claim 13 wherein the tube rotates in the same direction as the cylinder but at a different relative speed to the cylinder and, as a result of axial translation of the cylinder, overlap between the tube and cylinder, and differing relative speeds of rotation, eddy current forces are generated between the tube and cylinder creating a drag force on rotation of the tube and/or cylinder thereby causing the relative speed of rotation of the tube and cylinder to reduce.

20. The assembly as claimed in claim 6 or claim 13, wherein the tube rotates in a counter rotational direction to the cylinder and, as a result of axial translation of the cylinder, overlap between the tube and cylinder, and counter rotation, eddy current forces are generated between the tube and cylinder creating a drag force on rotation of the tube and cylinder thereby causing the relative speed of rotation of the tube and cylinder to reduce.