SUMMARY OF THE INVENTION

Embodiments of t~~T~~he present invention relate~~s~~ to one or more of the following features, elements or combinations thereof.

In one embodiment, a retractable USB reel includes a pair of data wires placed next to each other and overlaid with an EMI / RFI shield. The data wires may be twisted around each other. Conductors can also be placed and twisted around the data wires or put in parallel relationship with the data wires. The resulting conglomerate of wires and shields can then be covered with a low friction substance and then an EMI / RFI shield.

In another embodiment, a cord reel is provided with an electrically conductive material. The cord reel is configured to carry a stationary USB coil and a movable USB coil, such that the two USB coils are in communication with each other.

According to an aspect of the present invention, there is provided a universal serial bus cord reel apparatus comprising: a cable, the cable comprising a) first and second data wires adjacent to each other, and twisted around each other at approximately four twists per inch; b) a first braided shield surrounding the first and second data wires to prevent electromagnetic or radio frequency interference; c) two or more additional conductors adjacent to the shield surrounding the first and second data wires, the additional wires being twisted about the shield at approximately two twists per inch; d) a polytetrafluoroethylene cover enclosing the additional conductors and first and second data wires; and e) a second shield enclosing the polytetrafluoroethylene cover; whereby the cable has an impedance of approximately 90 ohms; a universal serial bus connector at each end of the cable; a housing; a reel attached to and rotatable with respect to the housing for accepting the cable; a spring mounted between the housing and the reel for biasing the rotation of the reel in one direction for retracting the cable; a ratchet attached to the housing for selectively restraining rotation of the reel whereby the cable may be maintained in an extended position, or retracted and wound on the reel.

According to another aspect of the present invention, there is provided a method for manufacturing a universal serial bus cable comprising the steps of: placing first and second data wires adjacent to each other; twisting the first and second data wires about each other at approximately four twists per inch; covering the twisted first and second data wires with a braided shield; placing one or more additional data wires in close proximity to the shield; forming a circular cross-section of the first and second data wires, the braided shield, and the one or more additional data wires by either twisting or helically fluting the one or more additional data wires about the braided shield at approximately two twists per inch, so that the resulting structure has a bend radius of at least approximately 55 millimeters; coating the braided shield and one or more additional data wires with a low-friction substance; covering the low-friction substance with a second shield resisting radio-frequency and electromagnetic interference, so that the resulting structure has an impedance of approximately 90 ohms and a signal rate of at least approximately 1.5 megabytes per second.

We claim:

1. A universal serial bus cord reel apparatus comprising:

A cable, the cable comprising a) first and second data wires adjacent to each other, and twisted around each other at approximately four twists per inch; b) a first braided shield surrounding the first and second data wires to prevent electromagnetic or radio frequency interference; c) two or more additional conductors adjacent to the shield surrounding the first and second data wires, the additional wires being twisted about the shield at approximately two twists per inch; d) a polytetrafluoroethylene cover enclosing the additional conductors and first and second data wires; and e) a second shield enclosing the polytetrafluoroethylene cover; whereby the cable has an impedance of approximately 90 ohms;

a universal serial bus connector at each end of the cable;

a housing;

a reel attached to and rotatable with respect to the housing for accepting the cable;

a spring mounted between the housing and the reel for biasing the rotation of the reel in one direction for retracting the cable;

a ratchet attached to the housing for selectively restraining rotation of the reel whereby the cable may be maintained in an extended position, or retracted and wound on the reel.

2. A method for manufacturing a universal serial bus cable comprising the steps of:

Placing first and second data wires adjacent to each other;

Twisting the first and second data wires about each other at approximately four twists per inch;

Covering the twisted first and second data wires with a braided shield;

Placing one or more additional data wires in close proximity to the shield;

Forming a circular cross-section of the first and second data wires, the braided shield, and the one or more additional data wires by either twisting or helically fluting the one or more additional data wires about the braided shield at approximately two twists per inch, so that the resulting structure has a bend radius of at least approximately 55 millimeters;

Coating the braided shield and one or more additional data wires with a low-friction substance;

Covering the low-friction substance with a second shield resisting radio-frequency and electromagnetic interference, so that the resulting structure has an impedance of approximately 90 ohms and a signal rate of at least approximately 1.5 megabytes per second.

3. A retractable Universal Serial cable apparatus, the apparatus comprising

a housing,

a spool positioned within the housing and arranged for rotation relative to the housing,

a stationary cable including a universal serial bus connector extending from the housing,

a retractable cable including a universal serial bus connector capable of being extended from and retracted into the housing and further capable of being in electrical communication with the stationary cable, and

a ratchet mounted on the housing, the ratchet having an engaged position wherein the ratchet is in electrical communication with the spool and the ratchet having a disengaged position, wherein the ratchet is not in electrical communication with the spool.

4. The apparatus of claim 3, wherein the ratchet comprises a conductor lead and the spool has a conductor mounted thereon.

5. The apparatus of claim 4, wherein in the engaged position, the conductor contacts the conductor lead.

6. The apparatus of claim 4, wherein the ratchet further comprises a second conductor lead and the spool has a second conductor mounted thereon.

7. The apparatus of claim 4, wherein the conductor is prevented from contacting the conductor lead when the retractable cord is being extended from the housing.

8. The apparatus of claim 3, wherein the stationary cord is in electrical communication with the ratchet.

9. The apparatus of claim 3, wherein the ratchet comprises a tooth in radial alignment with a wall of the spool.

10. The apparatus of claim 3, wherein the cable comprises at least first and second data wires adjacent to each other, and twisted around each other at approximately four twists per inch, and a first braided shield surrounding the first and second data wires to prevent electromagnetic or radio frequency interference.

11. The apparatus of claim 10, wherein the cable further comprises two or more additional conductors adjacent to the shield surrounding the first and second data wires, the additional wires being twisted about the shield at approximately two twists per inch, and a polytetrafluoroethylene cover enclosing the additional conductors and first and second data wires.

12. The apparatus of claim 11, wherein the cable further comprises a second shield enclosing the polytetrafluoroethylene cover, whereby the cable has an impedance of approximately 90 ohms.

13. A universal serial bus cable reel apparatus, the apparatus comprising a housing, a spool having a conductor coupled thereto, the spool being positioned within the housing and arranged for rotation relative to the housing,

a ratchet positioned to selectively engage the spool, and

a retractable cable at least partially wound around the spool, the retractable cable being extendable from the housing and having a universal serial bus extend from each end, wherein an electrical current is passed through a conductor coupled to the spool.

14. The apparatus of claim 13, wherein the ratchet comprises a conductor 9. lead configured to make contact with the conductor on the spool.

15. The apparatus of claim 14, wherein the ratchet further comprises a second conductor lead and the spool has a second conductor mounted thereon.

16. The apparatus of claim 13, wherein the conductor is prevented from contacting the ratchet when the retractable cord is being extended from the housing.

17. The apparatus of claim 13, further comprising a stationary cord in electrical communication with the ratchet.

18. The apparatus of claim 13, wherein the ratchet comprises a tooth in radial alignment with the spool.

19. The apparatus of claim 13, wherein the cable comprises at least first and second data wires adjacent to each other, and twisted around each other at approximately four twists per inch, and a first braided shield surrounding the first and second data wires to prevent electromagnetic or radio frequency interference.

20. The apparatus of claim 19, wherein the cable further comprises two or more additional conductors adjacent to the shield surrounding the first and second data wires, the additional wires being twisted about the shield at approximately two twists per inch, and a polytetrafluoroethylene cover enclosing the additional conductors and first and second data wires.

21. The apparatus of claim 20, wherein the cable further comprises a second shield enclosing the polytetrafluoroethylene cover, whereby the cable has an impedance of approximately 90 ohms.

We claim:

1. A universal serial bus cord reel apparatus comprising:

a cable, the cable comprising a) first and second data wires adjacent to each other, and twisted around each other at approximately four twists per inch; b) a first braided shield surrounding the first and second data wires to prevent electromagnetic or radio frequency interference; c) two or more additional conductors adjacent to the shield surrounding the first and second data wires, the additional wires being twisted about the shield at approximately two twists per inch; d) a polytetrafluoroethylene cover enclosing the additional conductors and first and second data wires; and e) a second shield enclosing the polytetrafluoroethylene cover; whereby the cable has an impedance of approximately 90 ohms;

a universal serial bus connector at each end of the cable;

a housing;

a reel attached to and rotatable with respect to the housing for accepting the cable;

a spring mounted between the housing and the reel for biasing the rotation of the reel in one direction for retracting the cable;

a ratchet attached to the housing for selectively restraining rotation of the reel whereby the cable may be maintained in an extended position, or retracted and wound on the reel.

2. A method for manufacturing a universal serial bus cable comprising the steps of:

placing first and second data wires adjacent to each other;

twisting the first and second data wires about each other at approximately four twists per inch;

covering the twisted first and second data wires with a braided shield;

placing one or more additional data wires in close proximity to the shield;

forming a circular cross-section of the first and second data wires, the braided shield, and the one or more additional data wires by either twisting or helically fluting the one or more additional data wires about the braided shield at approximately two twists per inch, so that the resulting structure has a bend radius of at least approximately 55 millimeters;

coating the braided shield and one or more additional data wires with a low-friction substance;

covering the low-friction substance with a second shield resisting radio-frequency and electromagnetic interference, so that the resulting structure has an impedance of approximately 90 ohms and a signal rate of at least approximately 1.5 megabytes per second.