

11. An input device comprising:

a sensor for detecting movement of at least a portion of said input device;

a wheel extending from said input device, said wheel being rotatably mounted about a wheel axis;

a brake for providing a braking action on said wheel at a position on said wheel removed from said axis of said wheel; and

an actuator, responsive to an open loop control signal, for biasing said brake against said wheel.

12. The input device of claim 11 wherein said brake is configured so that a user force on said wheel increases the force of said brake when said brake is activated.

13. The input device of claim 12 wherein brake, when activated, contacts an edge of said wheel at an angle such that increased turning of said wheel facilitates a braking force.

14. The input device of claim 11 wherein said actuator comprises an electromagnet.

15. The input device of claim 14 wherein said electromagnetic actuator and brake comprise:

a first electromagnet;

a first roller connected to said first electromagnet, and being positioned to engage said wheel upon activation of said first electromagnet;

a second electromagnetic; and

a second roller connected to said second electromagnet, and being positioned to engage said wheel upon activation of said second electromagnet.

16. The input device of claim 15 wherein:

said first roller is connected to said first electromagnet by a first lever arm such that said first roller contacts said wheel at a point above a line between an axis of said wheel and connection of said first lever arm to said first electromagnet; and

said second roller is connected to said second electromagnet by a second lever arm such that said second roller contacts said wheel at a point above a line between an axis of said wheel and connection of said second lever arm to said second electromagnet.

17. The input device of claim 1 wherein said brake comprises a roller for engaging a periphery of said wheel.

18. An input device for providing input signals to a host comprising:

a sensor for detecting movement of at least a portion of said input device;

a wheel extending from said input device, said wheel being rotatably mounted about a wheel axis;

a wheel sensor mounted to detect rotation of said wheel;

a circuit for receiving a sensor signal from said wheel sensor, and providing an actuator signal responsive to said wheel sensor signal, independent of said host; and

a wheel actuator, responsive to said actuator signal, for providing a force to said wheel.

19. The input device of claim 18 wherein said force comprises a series of detent forces, each detent force corresponding to an amount of rotation of said wheel.

20. An input device for providing input signals to a host comprising:

a device sensor for detecting movement of at least a portion of said input device and providing a device sensor signal;

a wheel extending from said input device, said wheel being rotatably mounted about a wheel axis;

a wheel sensor mounted to detect rotation of said wheel and provide a wheel sensor signal;

a circuit for receiving said device sensor signal from said device sensor, providing a report signal corresponding to said device sensor signal to said host, receiving a force-feedback signal from said host corresponding to said report signal, and providing an actuator signal responsive to said force-feedback signal; and

a wheel actuator, responsive to said actuator signal, for enabling a resistance to a user through said wheel, such that a resistance to said wheel is provided in response to movement of said portion of said input device.

21. The input device of claim 20 wherein said circuit further provides a second report signal to said host corresponding to said wheel sensor signal.

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