element is moved quickly until the target is nearly reached (point N in **FIG. 8**). Here, the speed of the tracking element is reduced until the exact position of the tracking element is reached (point E in **FIG. 8**). At this point, the braking effect starts (again with a slight delay, as shown in curve B in **FIG. 8**). Again, the braking effect will continue until it will be stopped by the user by releasing the brake with a mouse click or the like (point C in **FIG. 8**).

[0040] In **FIG. 9** there is shown the pulsed braking effect already mentioned above. The continuous line in this figure represents the speed of the tracking element, whereas the broken line represents the braking force. When using a "harder" brake covering like a mixture of felt and rubber, the braking force comes in by pulses, or, with other words, the tracking element moves jerkily. Each time such a pulse occurs, the speed of the tracking element slightly decreases, what is shown by the depressions of the continuous line.

[0041] Again, the braking force can be stopped by the user releasing the brake with a mouse click or the like (point C in **FIG. 9**).

[0042] Thus, there are two categories of braking forces. The constant breaking force, using a felt ring as the brake, can ideally be used when drawing freely with the tracking element. Furthermore, it can be used for a linear control of, e.g., film editing machines.

[0043] The pulsed breaking force, achieved by using a brake material formed, e.g., by a mixture of felt and rubber, represents a stronger brake and may be used, e.g., for drawing applications like connection schemes or construction programs, which require a certain scanning.

[0044] There are also applications which need a constant and precise control. In this case a light sensor, e.g., an IR sensor, may be integrated into the apparatus, so that it can be detected when a user's hand approaches the tracking element, and the braking effect may thus be started before the user touches the tracking element.

[0045] The present invention provides a self-applying brake for a tracking element without the necessity of applying a counter pressure. Thus, the tracking element of a cursor control device that controls the movement of a cursor on a computer display can be precisely controlled in the area of lower velocities and stopped. This may be especially advantageous when drawing freely using such a cursor control device.

What is claimed:

1. A cursor control device for controlling the movement of a cursor on a computer display, said cursor control device comprising:

a tracking element; and

a braking device operable to apply a braking force on said tracking element, said braking force being dependent on the speed of said cursor.

2. The cursor control device of claim 1, wherein said tracking element is spherical.

3. The cursor control device of claim 2, wherein said tracking element comprises an iron shell.

4. The cursor control device of claim 1 wherein said tracking element forms part of a mouse, a trackball, or a joystick.

5. The cursor control device of claim 1 wherein said braking force is generated by an electromagnetic device.

6. The cursor control device of claim 5, wherein said electromagnetic device generates a magnetic field that can be periodically switched on and off.

7. The cursor control device of claim 5, wherein said electromagnetic device generates a continuously variable magnetic field.

8. The cursor control device of claim 1, wherein the braking device comprises: a cylinder carrying a coil and being provided with a first iron core carrying a pin to be inserted into a respective opening provided in a second iron core arranged at an inner bottom portion of a pot-like element, whereby said pin is fixedly connected with a plate arranged at an outer bottom portion of said pot-like element through a bore coaxial to said opening, said second iron core being adapted to slidably move along said pin, and wherein said pot-like element is provided with a ring arranged at a top portion thereof.

9. The cursor control device of claim 8, wherein said ring is made of a material selected from the group comprising felt, fleece, rubber, cork or mixtures thereof.

10. The cursor control device of claim 8, wherein said pot-like element is movable between a non-activated and an activated state.

11. The cursor control device of claim 8, wherein the length of said pin is dimensioned such that a distance between a lower surface of said first iron core and an upper surface of said plate is greater than the thickness of said second iron core.

12. The cursor control device of claim 1, comprising one or more cylinders disposed adjacent to said tracking element, each cylinder having a coil mounted therein, whereby an upper end of said cylinder carries a braking surface for engaging with said tracking element, and wherein a lower end of said cylinder has the form of a round plate serving as a stopper, said coil being inserted into a magnetic ring, and a spring being arranged between said ring and said plate.

13. The cursor control device of claim 12, wherein said magnetic ring is secured to a housing and said coil rests on a bottom of said housing.

14. The cursor control device of claim 1, further comprising a light sensor.

15. The cursor control device of claim 14 wherein said light sensor is an IR light barrier.

16. A method for controlling a cursor, said method comprising the steps of:

displaying a cursor;

moving the cursor in response to manipulation of a cursor control device comprising a tracking element; and

generating a user-discernible braking force on said tracking element depending on the speed of said cursor.

17. The method according to claim 16, wherein said braking force is generated by an electromagnetic device.

18. The method of claim 17, wherein said electromagnetic device generates a magnetic field that is periodically switched on and off.

19. The method of claim 17, wherein said electromagnetic device generates a continuously variable magnetic field.

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