Flash Memory Feet

Descriptions

The inventive step converts any of the feet under any System Unit into useful electronic gadget(s) also known as Electronic Feet Device(s) (EFD). A System Unit is any electronic and electrical device and equipment that uses Flash Memory Drive, and has feet underneath for support, such as a computer towers, Apple iPad, eBook reader, scanners, graphic tablet, and computer tablet and any other equipments or industrial equipments that uses feet for support. A laptop is use to illustrate the application of this invention.

The Electronic Feet Device(s) is an integral part of the System Unit because it is a key contributing component with the vital value to protect the underneath of the System Unit and to provide the support structure to the System Unit for the System Unit to function usefully as a fully and wholly functional stand alone and complete System Unit. The Electronic Feet Device(s) protects the underneath of the System Unit by acting as a protection piece between the System Unit and the platform it is resting on for support.

One example is to place inside any of the feet under any System Unit a Flash Memory Chip to function as a Flash Memory Feet. A preferred but not the only applicable function of the Flash Memory Feet is as a Flash Memory Drive. Another preferred application is to function as a Security token.

The purpose of incorporates the useful electronic gadget(s) into peripheral device(s) of different expanded functions and capabilities is to give support to the System Unit that they are attached underneath to. Currently there is no such a product that is converts a system feet into a flash memory.

A Flash Memory Drive is used as a hard drive to store rewriteable data on an Electrically Erasable Programmable Read-Only Memory (EEPROM) that is erased and programmed in large blocks. The Flash Memory Feet fastened itself to the System Unit by securing itself to the bottom of the host controller which no standard Flash Memory Drive does.

As an integral part of the System Unit, the Flash Memory Feet goes where the System Unit goes: into the car, into the train, and everywhere on a business road trip, therefore the user has no problem remembering to bring the Flash memory Feet along on a

business trip. The System Unit user enjoys easy and quick access to the Flash Memory information any time by having the Flash Memory Feet underneath all the time.

Flash Memory Feet

Brief Description of the drawings

Fig 1. A Flash Memory Feet
Fig 2. A Flash Memory Feet Printed Circuit Board Assembly (PCBA) with a Universal Serial Bus (USB) cable
Fig 3. A Flash Memory Feet exploded isometric drawing
Fig 4. A Flash Memory Feet exploded cross sectional drawing
Fig 5. A rectangular Flash Memory Printed Circuit Board Assembly (PCBA) with a pre-fixed Universal Serial Bus (USB) cable
Fig 6. A Flash Memory Feet rectangular housing front view
Fig 7. A Flash Memory Feet rectangular housing (fig3m, fig4j) top view
Fig 8. An eBook Reader using two Flash Memory Feet
Fig 9. A System unit using two Flash Memory Feet
Fig10. A Printer using four Flash Memory Feet

Claims

1. The invention places a Flash Memory Chip Module with all its necessary electrical and electronic components, and software drivers inside any one of the feet of a System Unit to function as a Flash Memory Drive or a Software Security Dongle.
2. The inventive step converts any or all of the feet (fig1, fig6, fig7, fig8a, fig9a, fig9c, fig10a, fig10c, fig10e) under any System Unit (fig8, fig9, fig10) into useful electronic gadget(s) such as peripheral device(s).
3. A System Unit (fig8, fig9, fig10) is any electronic and electrical device and equipment that uses Flash Memory Drive or Security Token, and has feet underneath for support such as Computer Towers, Apple iPad (fig8), eBook Reader, Scanners, Graphic Tablet, Computer Tablet, Television, Liquid Crystal Display, Speakers, Hi-Fi Amplifiers, Printers (fig10), Fax Machines, some industrial electrical electronic testing equipments etc.
4. The purpose of incorporating the peripheral device(s) is to give expanded peripheral support to the System Unit (fig8, fig9, fig10) that they are attached to
5. The peripheral device(s) is also known as Electronic Feet Device(s) since it also function as a feet under System Unit.
6. The Electronic Feet Device(s) can have many different types of peripheral functions
7. The many different types of peripheral functions can be inter-complementing to one another.
8. The inter-complementing peripherals function to give a full and complete set of expanded peripheral functions to the System Unit (fig8, fig9, fig10) they are attached to.
9. The full and complete set of expanded complementing peripheral functions and capabilities can be a set of two or more Electronic Feet Device(s).
10. The Electronic Feet Device(s) (fig1, fig6, fig7, fig8a, fig9a, fig9c, fig10a, fig10c, fig10e) go together with the System Unit (fig8, fig9, fig10) as one single piece equipment (fig8, fig9, fig10) and stays underneath (fig8b, fig9b, fig10b) the System Unit (fig8, fig9, fig10) as a permanent fixture.
11. The Electronic Feet Device(s) (fig1, fig6, fig7, fig8a, fig9a, fig9c, fig10a, fig10c, fig10e) is an integral part of the System Unit (fig8, fig9, fig10) because it is a key contributing component of value to the System Unit.
12. The Electronic Feet Device(s) function as a protection to the bottom underneath (fig8b, fig9b, fig10b) the System Unit (fig8, fig9, fig10) and provide the vital support structure to the System Unit body (fig8, fig9, fig10) for the system to function usefully as a complete System Unit (fig8, fig9, fig10); fully and wholly functional stand alone unit.

13. The Electronic Feet Device(s) (fig1, fig6, fig7, fig8a, fig9a, fig9c, fig10a, fig10c, fig10e) protects the bottom underneath (fig8b, fig9b, fig10b) of the System Unit (fig8, fig9, fig10) by acting as connecting pieces between the System Unit (fig8, fig9, fig10) and the platform it is resting on for support.
14. The Electronic Feet Device(s) (fig1, fig6, fig7, fig8a, fig9a, fig9c, fig10a, fig10c, fig10e) provide the vital support to the System Unit (fig8, fig9, fig10) by becoming a support base structure platform to sustain the System Unit (fig8, fig9, fig10) against the ground platform the System Unit is rest on.
15. Another of Electronic Feet Device(s) (fig1, fig6, fig7, fig8a, fig9a, fig9c, fig10a, fig10c, fig10e) is to function as an expanded peripheral to support the System Unit (fig8, fig9, fig10).
16. The System Unit (fig8, fig9, fig10) is connected to the Electronic Feet Device(s) (fig1, fig6, fig7, fig8a, fig9a, fig9c, fig10a, fig10c, fig10e) by wireless data interface such as a Wireless Personal Networks (WPANs) or Universal Serial Bus (USB) (fig2f, fig3f, fig5c, fig10f) cable.
17. One such Electronic Feet Device(s) is to place inside the Feet a Flash Memory Chip to convert the Feet into a Flash Memory Feet
18. A preferred applicable function of the Flash memory Feet is as a Flash Memory Drive.
19. Another preferred application of the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) is to function as a Security Token (or known sometimes a hardware token, hard token, authentication token, USB token, cryptographic token, or key fob) may be a physical device that an authorized user of computer services is given to ease authentication. The term may also refer to software tokens or software protection dongles.
    a. Security tokens are used to prove one's identity electronically in addition to or in place of a password to prove that the customer is who they claim to be. The token acts like an electronic key to access something.
    b. The security token may be connected physically to the System Unit by a USB cable or using wireless techniques, such as Bluetooth. These tokens transfer a key sequence to the local client or to a nearby access point.
    c. Physical security tokens plug into the computer and to enter a PIN number and perform cryptographic operation or ask the token's firmware to perform this operation. For example a hardware dongle may require the user to prove ownership of the software before authorizing the use of the software and information.
    d. There are four types of tokens: static password, synchronous dynamic password, asynchronous password, challenge response.

20. Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) is a generic name to mean any one foot under the System Unit (fig8, fig9, fig10) that is converted to a peripheral with the Flash Memory function.
21. A Flash Memory Drive store rewriteable data on an Electrically Erasable Programmable Read-Only Memory (EEPROM) (fig2d, fig5a) that is erased and programmed in large blocks.
22. The Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) fastened itself to the System Unit by securing itself to the bottom of the system which no standard Flash Memory Drive does, which no other flash memory drive does.
23. The Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) is a hidden flash memory drive inside a system feet therefore confidential information can be stored inside such as important company sales and customers update, and sensitive information such as accounting profit and loss report.
24. The paring password feature of the Bluetooth command gives added security to the information inside the flash memory drive.
25. There is no such hidden flash memory that function as a feet under System Unit available in the market.
26. Because it is a peripheral that is attached to the underneath (fig8b, fig9b, fig10b) of the System Unit all the time, the System Unit user will have no problem remembering to bring the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) with the System Unit everywhere.
27. As an integral part of the System Unit (fig9), the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) goes where the System Unit goes: into the car, into the train, and everywhere under the System Unit and the user will have no problem remembering to bring the flash memory drive on a business road trip etc.
28. The System Unit (fig9) user enjoys easy and quick access to the Flash Memory information any time by having the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) underneath (fig8b, fig9b, fig10b) all the time.
29. Being attached underneath (fig8b, fig9b, fig10b) the System Unit (fig8, fig9, fig10) and the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) are always within very close range (inches away) whether connected by wireless Bluetooth interface or Universal Serial Bus (USB) (fig2f, fig3f, fig5c, fig10f) cable interface, the bi-directional data signal will always remains strong and connected.
30. System unit user who uses the standard Flash Memory Drive and not the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) has to carry the extra piece of the standard Flash Memory Drive separately on a road trip.
31. Carrying the extra piece increase the risk of losing the standard Flash Memory Drive to theft and forgetfulness on a road trip.

32. The information on the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) can be transferred to another System Unit easily by Bluetooth password connection or by connecting a USB cable.
33. System unit user can keep private and sensitive information separately and safely inside the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) away from the public easily.
34. With the private information stored separately in the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e), the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) acts as an insurance to protect the information if the hard disk should fail or crash
35. Because the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) is convenient located at very close range (inches away) to the System Unit, it make updating of information from the System Unit to the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) a very easy task.
36. Some types of important information that need to be updated regularly are particularly useful to keep inside the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) such sales report and inventory reports that need to be constantly updated
37. Important information can regularly to be updated files in one feet and Sensitive information can be keep in anther feet.
38. A preferred but not the only wireless data interface between the System Unit (fig8, fig9, fig10) and the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) is the Wireless Personal Networks (WPANs) also known as Bluetooth.
    a. Bluetooth is a Wireless Personal Area Networks (WPANs) that interconnect devices within a relatively small area, generally within reach of a person. In this case interconnecting a Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) to the System unit by using the IEEE 802.11 protocol standards.
        a. Bluetooth uses a radio technology called frequency-hopping spread spectrum, which chops up the data being sent and transmits chunks of it on up to 79 bands of 1 MHz width in the range 2402-2480 MHz. .
        b. The 802.11 protocol network standards includes 802.11-1997, 802.11a, 802.11b, 802.11g, 802.11-2007, 208.11n.
        c. Applicable for the following Bluetooth v4.0, v3.0+HS, v2.1 +EDR, v2.0+EDR, v1.2, v1.1, v1.0B, v1.0.
39. Another optional interface between the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) and System Unit is by using the Universal Serial Bus (USB) (fig2f, fig3f, fig5c, fig10f) cable interface.
40. A Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) module (fig 2b, fig3j, fig5) is build by populating a Printed Circuit Board Assembly (PCBA) with a Flash Memory Chip (fig2d, fig5a) and all the

necessary electrical and electronic components to fully function as an expanded Flash Memory Drive.

41. A Universal Serial Bus (USB) (fig2f, fig3f, fig5c, fig10f) Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) typically uses the Universal Serial Bus (USB) (fig2f, fig3f, fig5c, fig10f) mass storage device class to communicate with the host. The necessary circuit elements and components to work as a Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e).
    d. There are typically four parts to a Universal Serial Bus (USB) (fig2f, fig3f, fig5c, fig10f) Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA).
        i. A USB connector – provides an interface to the host computer.
        ii. USB mass storage controller – implements the USB host controller. The controller contains a small microcontroller with a small amount of on-chip ROM and RAM.
        iii. NAND flash memory chip – stores data. NAND flash is typically also used in digital cameras.
        iv. Crystal oscillator – produces the device's main 12 MHz clock signal and controls the device's data output through a phase-locked loop.
    b. The typical Universal Serial Bus (USB) (fig2f, fig3f, fig5c, fig10f) Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) device may also include.
        i. Jumpers and test pins – for testing during the flash drive's manufacturing or loading code into the microprocessor.
        ii. LEDs (fig2c, fig3k,fig6d) – indicate data transfers or data reads and writes..
        iii. Write-protect switches – Enable or disable writing of data into memory.
        iv. Unpopulated space – provides space to include a second memory chip. Having this second space allows the manufacturer to use a single printed circuit board for more than one storage size device.
        v. USB connector cover or cap – reduces the risk of damage, prevents the ingress of fluff or other contaminants, and improves overall device appearance. Some flash drives use retractable USB connectors instead. Others have a swivel arrangement so that the connector can be protected without removing anything.
        vi. Transport aid – the cap or the body often contains a hole suitable for connection to a key chain or lanyard. Connecting the cap, rather than the body, can allow the drive itself to be lost.

vii. Some drives offer expandable storage via an internal memory card slot, much like a memory card reader.

42. A Bluetooth Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) will incorporate Bluetooth component into the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly Module and all its necessary components to make it a Bluetooth capable memory drive.
43. The Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) is then placed inside a under utilize foot of a System Unit (fig8, fig9, fig10).
44. The Universal Serial Bus (USB) (fig2f, fig3f, fig5c, fig10f) Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) inside the foot of a System Unit (fig8, fig9, fig10) is then connected to the System Unit (fig8, fig9, fig10) to create a USB Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e).
45. A preferred but not the only wired data interface between the host controller and the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) is to use a Universal Serial Bus (USB) (fig2f, fig3f, fig5c, fig10f).
46. The Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) draws its electrical power from the System Unit (fig8, fig9, fig10) power source it is attached to by the use of a Universal Serial Bus (USB) (fig2f, fig3f, fig5c, fig10f) cable interface connection.
47. A Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) using Bluetooth IEEE 802.11 standard configuration will need to draw its electrical power from an electrical Direct Current (DC) battery source located inside the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) housing (fig3m, fig4j) or from an external source such as an electrical Alternate Current (AC). A Direct Current (DC) electrical battery is a combination of one or more electrochemical cells, used to convert stored chemical energy into electrical energy.
48. The embodiment of the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) can be created in various shapes and sizes to complement the System Unit (fig8, fig9, fig10) physical appearance to fit its shape, size, and weight.
49. An example would be a create a longer and wider Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) to fit a larger and wider System unit.
50. The Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9a, fig9c, fig10a, fig10c, fig10e) protects the System Unit (fig8, fig9, fig10) by its bigger (fig1e, fig6e, fig7c, fig7d) and taller (fig1g, fig6g) and harden tough housing (fig3m, fig4j) (fig3m, fig4j) embodiment
51. A preferred Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) housing (fig3m, fig4j) embodiment but not the only embodiment is the shape of an hemisphere.

52. The preferred hemisphere embodiment of the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) housing (fig3m, fig4j) is a five piece assembly: Top Cap (fig1b, fig3a, fig4a, fig6c, fig7b), Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) Housing Cover (fig3c, fig4e), Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) (fig2b, fig3j, fig4g, fig5b), Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) Housing (fig3k, fig4j), and Bottom Protective Layer (fig3t, fig4p).
53. The top (fig1b, fig4b, fig6c) of the Top Cap (fig1b, fig3a, fig4a, fig6c, fig7b) attaches to the underneath (fig8b, fig9b, fig10b) of the System Unit (fig8, fig9, fig10) and the bottom fig3d, fig4p) of the Top Cap (fig1b, fig3a, fig4a, fig6c, fig7b) attached to the top of the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) Housing Cover (fig3c, fig4e).
54. The Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) is place inside (fig3p, fig4h) the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) Housing (fig3m, fig4j).
55. The Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) Housing Cover (fig3c, fig4e) covers the top of the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) Housing (fig3m, fig4j).
56. The top (fig3s, fig4m) of the Bottom Protective Layer is attached to the bottom (fig3n, fig4k) of the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Printed Circuit Board Assembly (PCBA) housing (fig3m, fig4j).
57. Each Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) Housing (fig3m, fig4j) can house one or more Printed Circuit Board Assembly (PCBA) with more than one expanded peripheral functions and capabilities.
58. The Top Cap (fig1b, fig3a, fig4a, fig6c, fig7b) is attached permanently to the underneath (fig8b, fig9b, fig10b) of the System Unit (fig8, fig9, fig10) by either double sided adhesive, screw fastener, or bolt fastener.
59. Another optional Top Cap (fig1b, fig3a, fig4a, fig6c, fig7b) attachment to the underneath (fig8b, fig9b, fig10b) of the System Unit (fig8, fig9, fig10) is to use a Strong Post-On and Strong Peel-Off adhesive.
60. The Strong Post-on and Strong Peel-Off adhesive does not stick permanently under the System Unit (fig8, fig9, fig10) and can be Peel-Off easily but still strong enough to stay under the System Unit (fig8, fig9, fig10) without falling off. The Peel-Off adhesive can Post-On again on the same or another surface underneath (fig8b, fig9b, fig10b) the System Unit (fig8, fig9, fig10).

61. One side of the Strong Post-On and Strong Peel-Off adhesive does stays semi-permanently stuck to the underneath (fig8b, fig9b, fig10b) of the System Unit (fig8, fig9, fig10) and the other side of the Strong Post-On and Strong Peel-Off adhesive sticks permanently to the top of the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e).
62. The advantage of using Strong Post-On and Strong Peel-Off adhesive is to allow easy and fast swapping from one Electronic Foot Device(s) of one expanded peripheral function to another Electronic Feet Device(s) (fig1, fig6, fig7, fig8a, fig9a, fig9c, fig10a, fig10c, fig10e)of a different peripheral expanded function.
63. The attachment between the five assemblies to make the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) can be by the use of internal and external thread method or tight fit snap join method.
64. The inventive step of a taller (fig1g, fig6g) and bigger (fig1e, fig6e, fig7c, fig7d) shape and size Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) adds various ergonomic advantages.
65. The taller (fig1g, fig6g) and bigger (fig1e, fig6e, fig7c, fig7d) shape and size of the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) creates a higher and larger air gap that allows sufficient naturally air from its surrounding environment to circulate underneath (fig8b, fig9b, fig10b) the System Unit (fig8, fig9, fig10) for the System Unit (fig8, fig9, fig10) to operate at a lower heat temperature.
66. With the higher and larger air gap, the System Unit (fig8, fig9, fig10) can be easily lifted up and carried about with a better grip by inserting one fingers comfortably underneath (fig8b, fig9b, fig10b) into the larger air gap between the System Unit (fig8, fig9, fig10) and the platform the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e).
67. The inventive step to change the coating layer on the surface bottom of the Protective Bottom Layer of the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) adds further ergonomic advantages.
68. The preferred coating on the bottom surface of the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) bottom layer is a smooth layer of coat to facilitate the System Unit (fig8, fig9, fig10) to slide about easily on desktop or floor for improved handling.
69. An optional coating on the bottom surface of a Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) bottom layer is a high friction layer of coat to prevent the System Unit (fig8, fig9, fig10) from moving about particularly useful for System Unit (fig8, fig9, fig10) that are placed in high and tight shelving .
70. The preferred material of the Flash Memory Feet (fig1, fig6, fig7, fig8a, fig9c, fig10e) embodiment is Acrylonitrile Butadiene Styrene (ABS) plastic. Other type of material includes rubber with ABS and metal combination.