



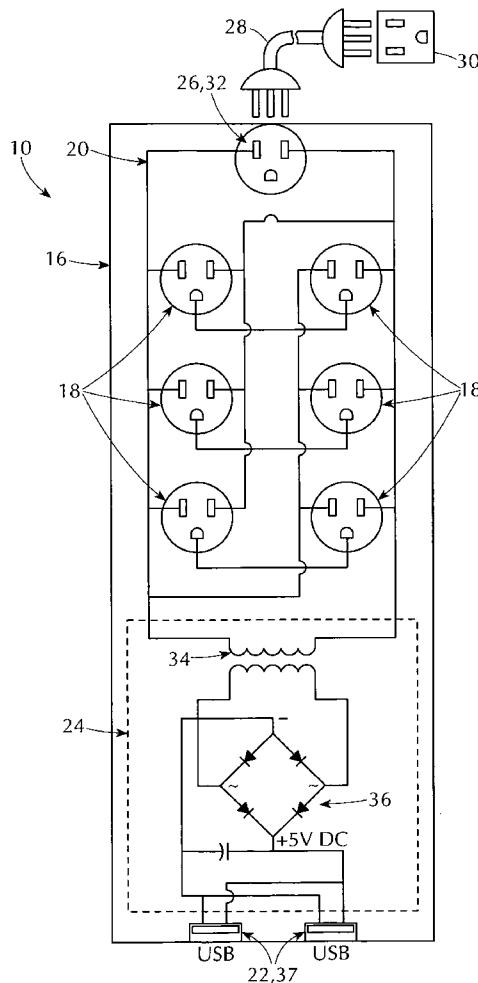
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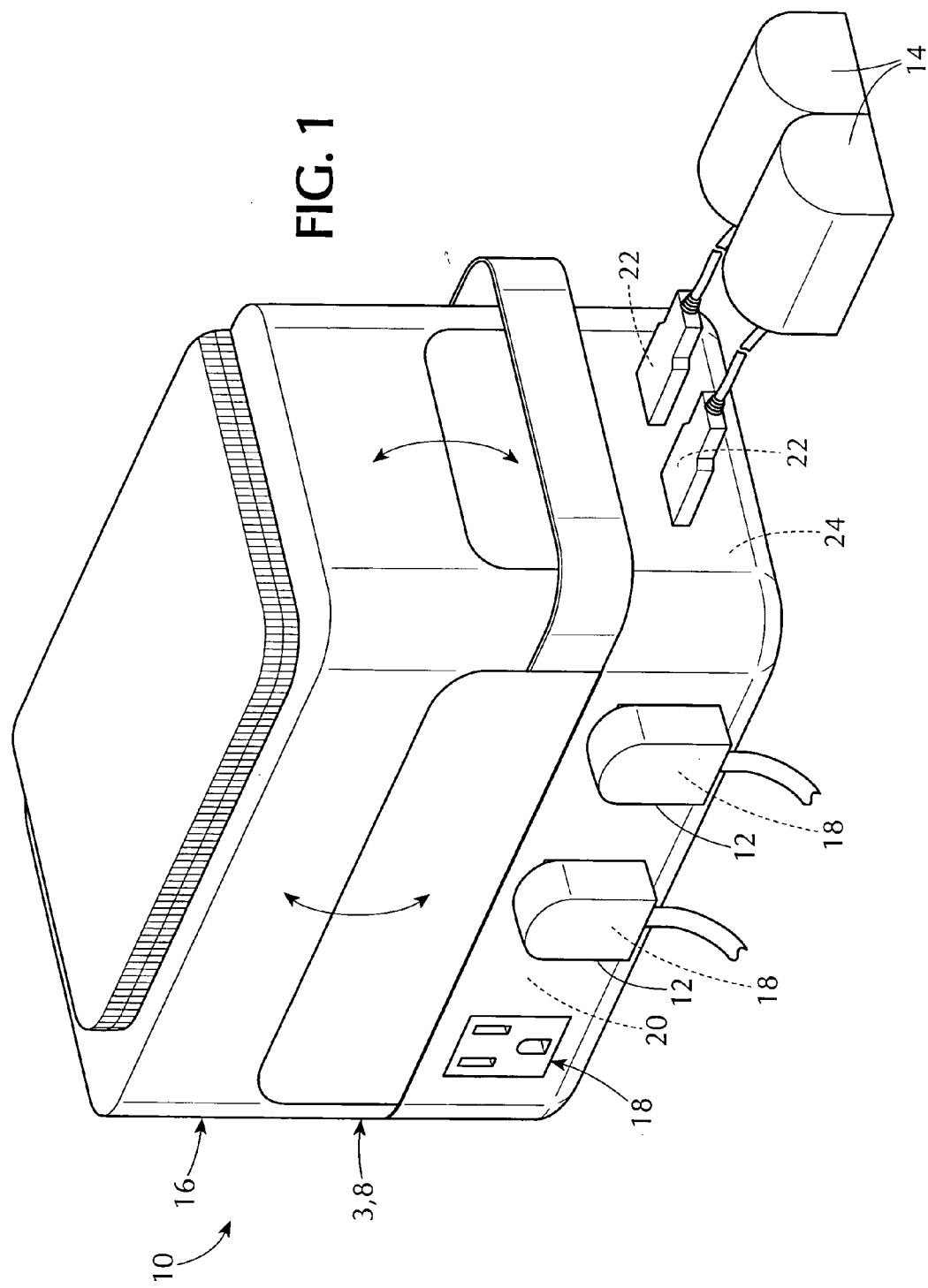
(19) **United States**(12) **Patent Application Publication**
DeSanctis(10) **Pub. No.: US 2010/0213892 A1**(43) **Pub. Date: Aug. 26, 2010**(54) **PORTABLE DOCKING STATION FOR
POWERING MULTIPLE AC-POWERED
BATTERY CHARGERS AND MULTIPLE
DC-POWERED BATTERY CHARGERS
SIMULTANEOUSLY****Publication Classification**(51) **Int. Cl.**
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(52) **U.S. Cl.** **320/107**(57) **ABSTRACT**(76) **Inventor:** **Jeanne DeSanctis**, Jensen Beach,
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NEW YORK, NY 10038 (US)(21) **Appl. No.:** **12/658,392**(22) **Filed:** **Feb. 5, 2010****Related U.S. Application Data**(60) **Provisional application No. 61/208,387, filed on Feb.**
23, 2009.

A portable docking station for powering multiple AC-powered battery chargers and multiple DC-powered battery chargers simultaneously. The portable docking station includes an enclosure, a plurality of female AC receptacles, an AC power circuit, a plurality of female DC receptacles, and a DC power circuit. The plurality of female AC receptacles and the plurality of female DC receptacles are accessible from the enclosure. The AC power circuit is contained within the enclosure and powers the plurality of female AC receptacles for powering the multiple AC-powered battery chargers. The DC power circuit is contained within the enclosure and powers the plurality of female DC receptacles for powering the multiple DC-powered battery chargers. The AC power circuit and the DC power circuit operate simultaneously for powering the multiple AC-powered battery chargers and the multiple DC-powered battery chargers, respectively, simultaneously.





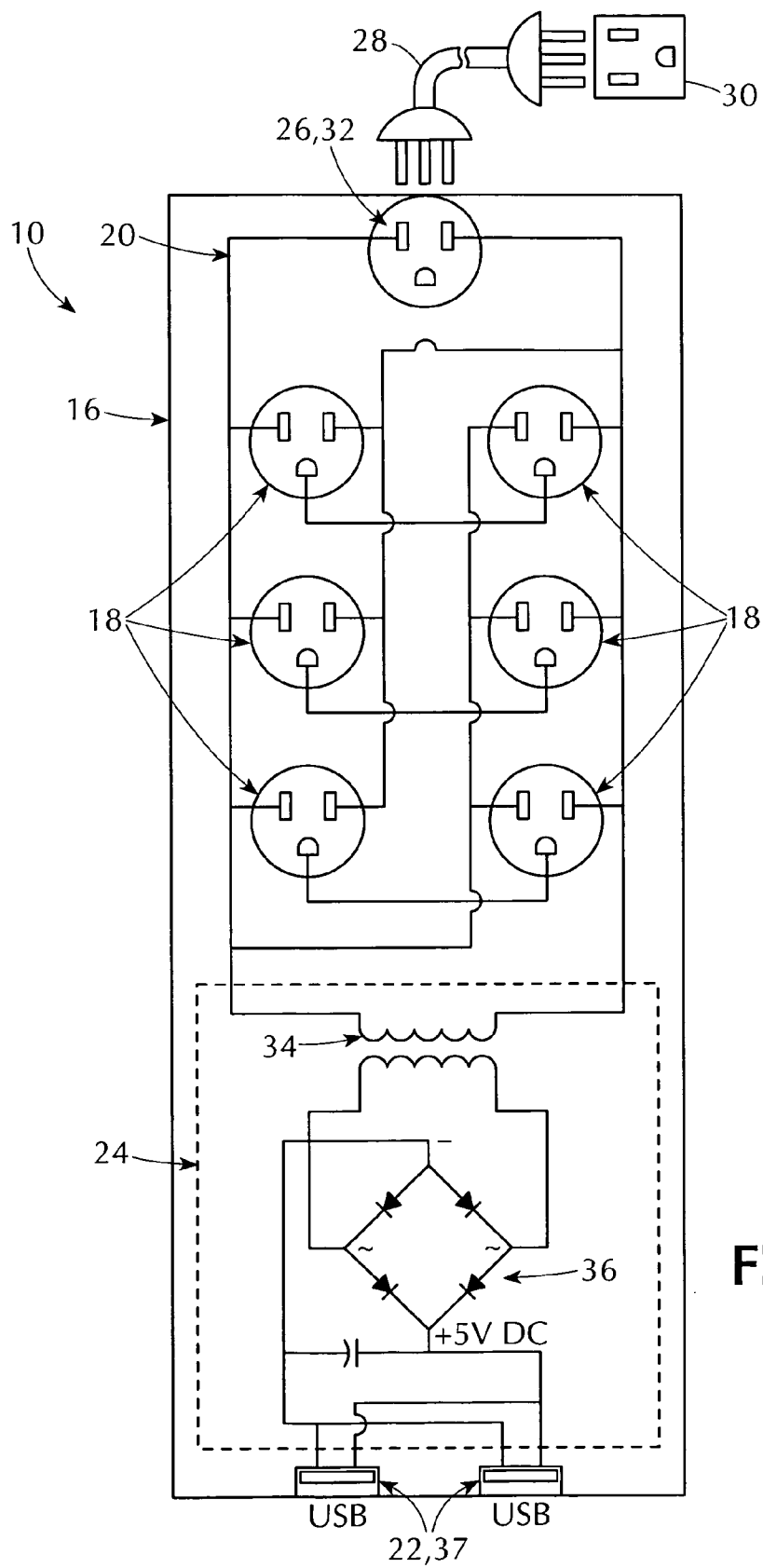
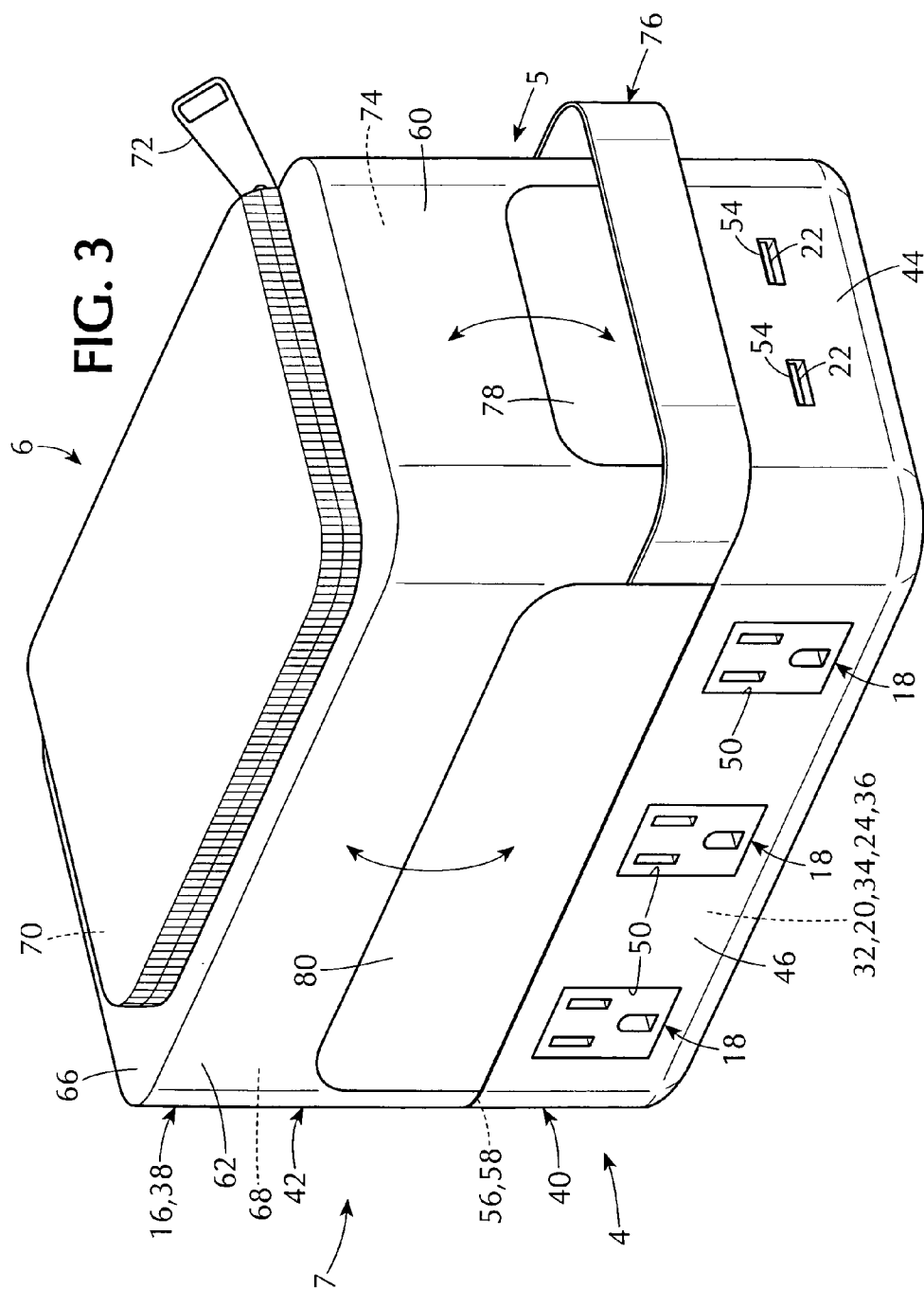


FIG. 2



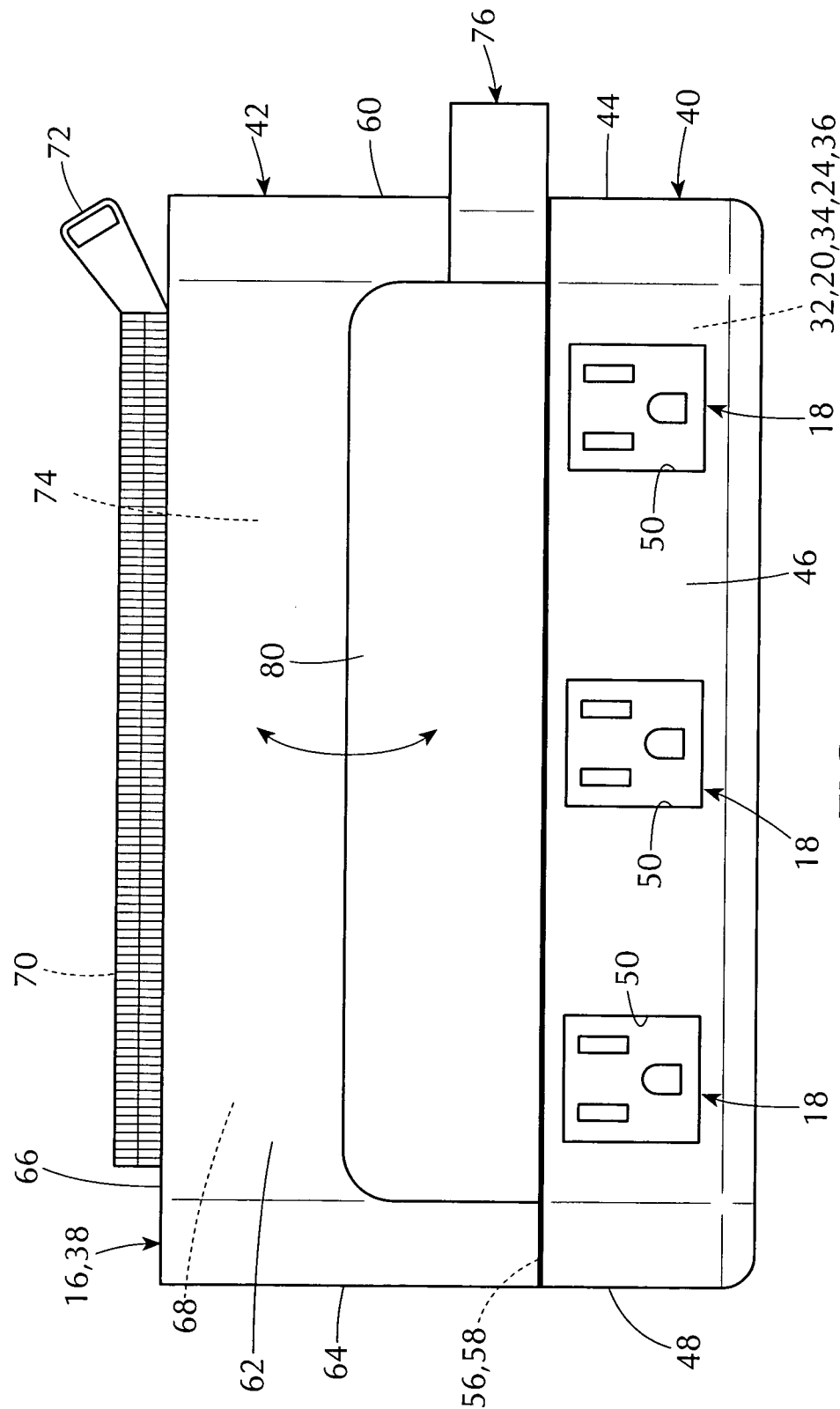
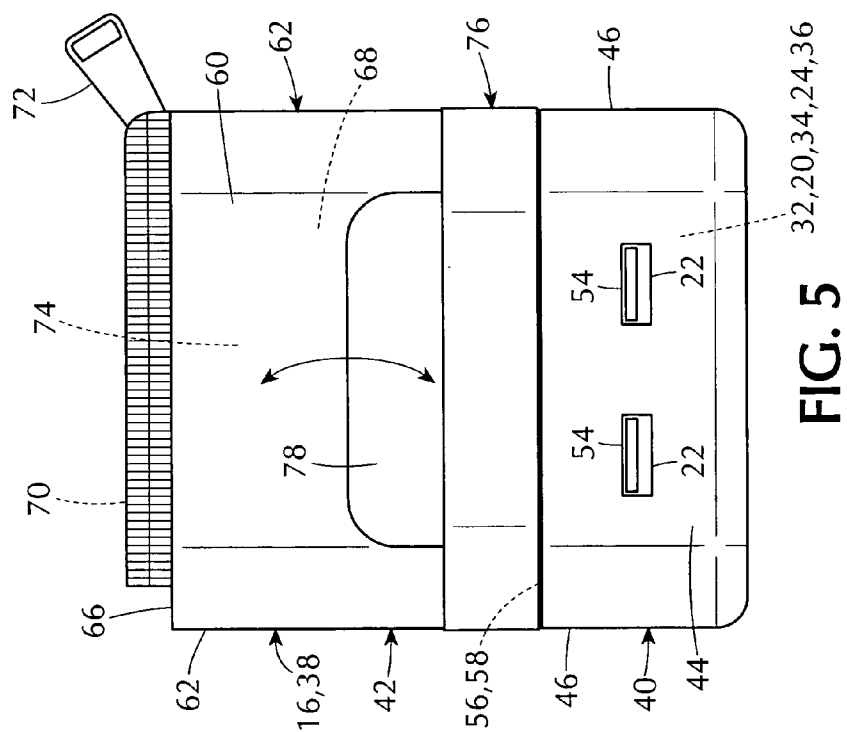
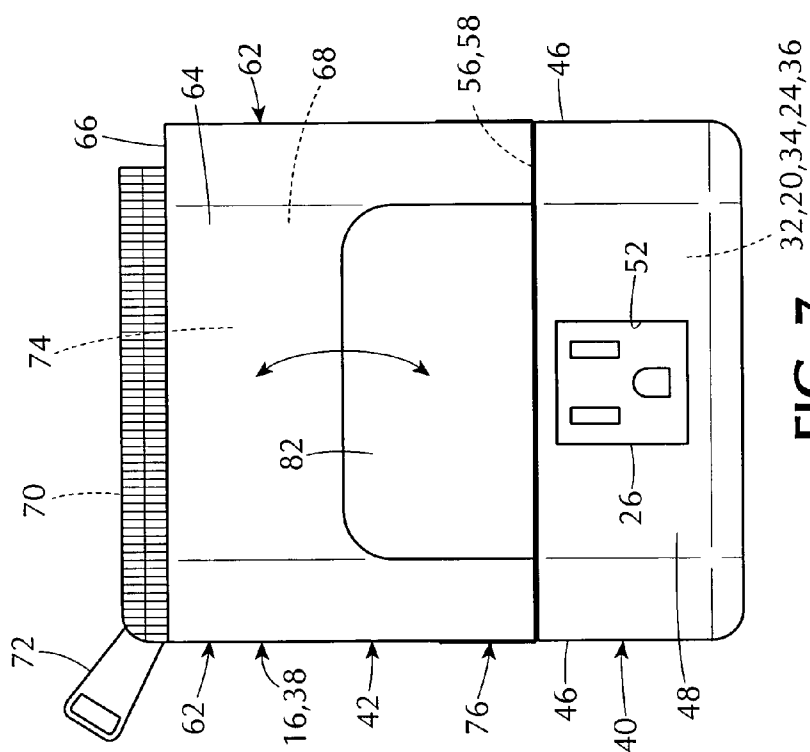


FIG. 4



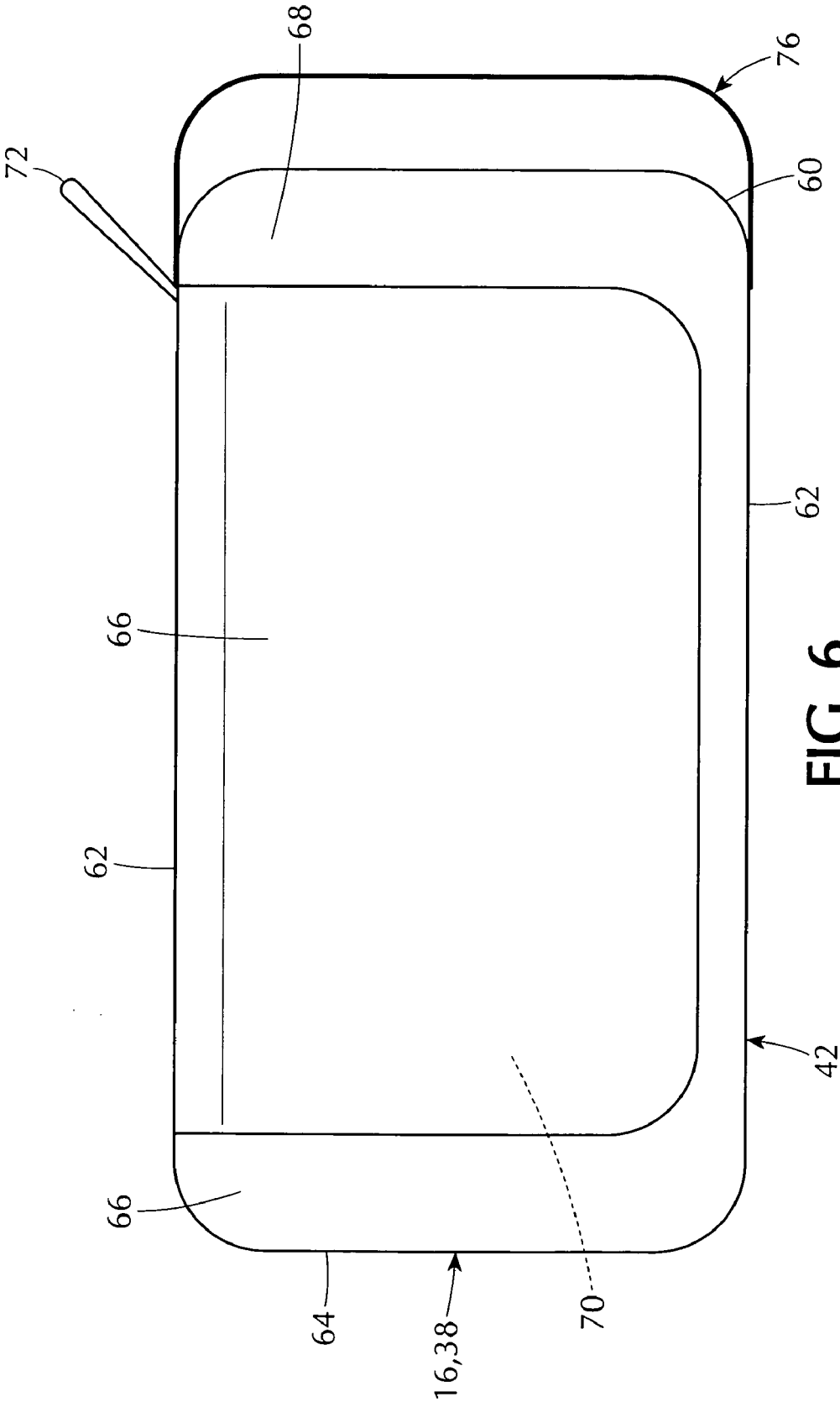
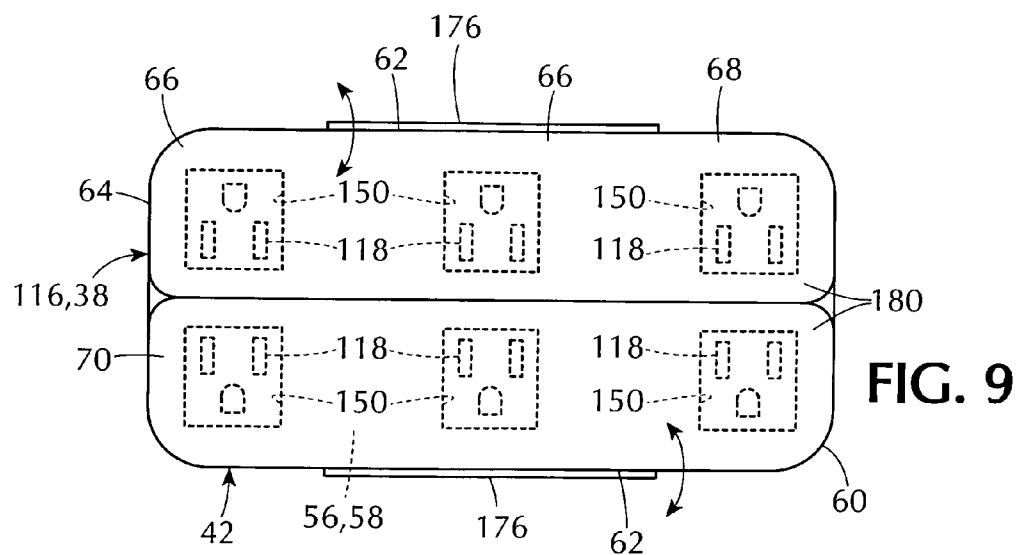
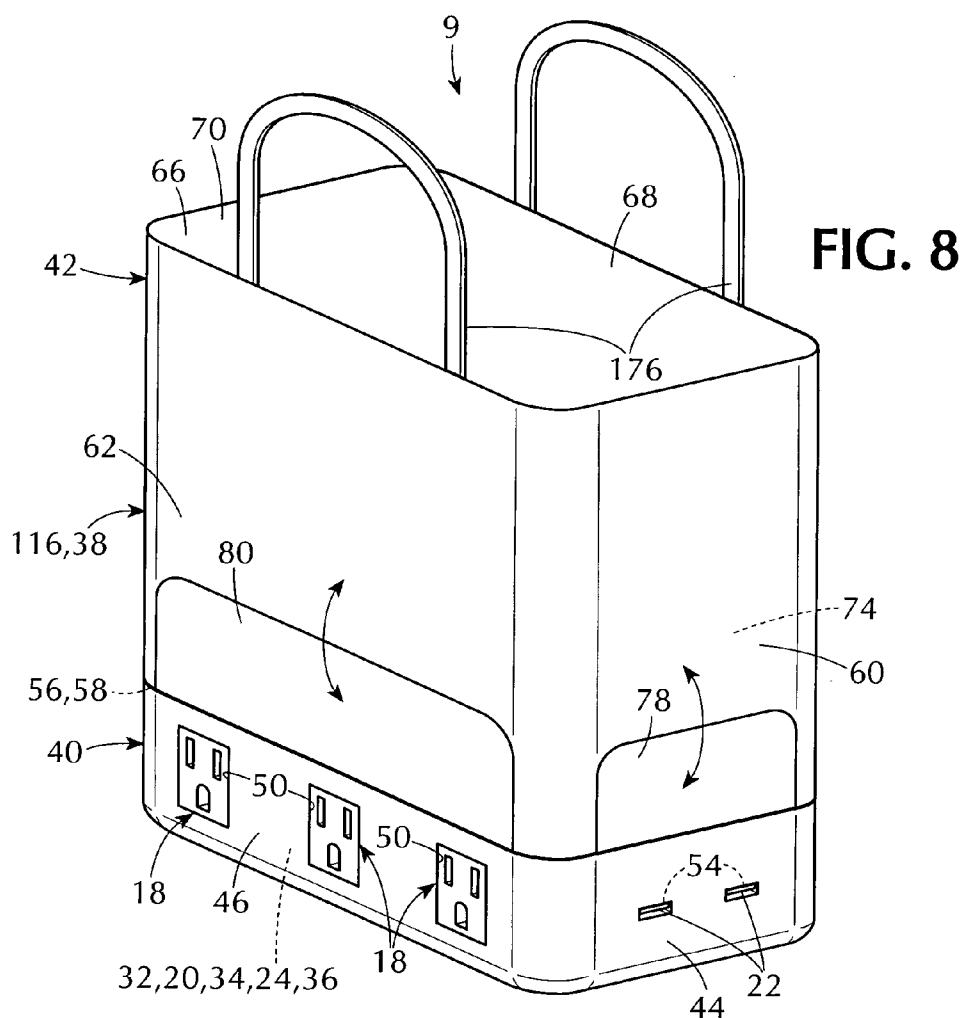


FIG. 6



**PORTABLE DOCKING STATION FOR
POWERING MULTIPLE AC-POWERED
BATTERY CHARGERS AND MULTIPLE
DC-POWERED BATTERY CHARGERS
SIMULTANEOUSLY**

1. CROSS REFERENCE TO RELATED
APPLICATIONS

[0001] The instant non-provisional patent application claims priority from provisional patent application No. 61/208,387, filed on Feb. 23, 2009, and incorporated herein by reference thereto.

2. BACKGROUND OF THE INVENTION

[0002] A. Field of the Invention

[0003] The embodiments of the present invention relate to a portable docking station, and more particularly, the embodiments of the present invention relate to a portable docking station for powering multiple AC-powered battery chargers and multiple DC-powered battery chargers simultaneously.

[0004] B. Description of the Prior Art

[0005] Today, many people own many portable electronic devices having internal batteries. Each device requires that its internal battery be recharged via charging units, e.g., "chargers." One person may have a mobile phone, a separate smartphone/organizer like a Palm Pilot® or a Blackberry®, an iPod®, a digital camera, various lap tops, and/or other portable music players, each with its own charger and/or charging station.

[0006] When people travel they often have multiple electronic devices and their corresponding chargers. A traveler not only faces the task of packing and organizing their chargers, but also of charging each device when they arrive at their destination. To make matters more difficult, there may not be enough accessible wall sockets at their destination, a hotel room, perhaps, to accommodate all devices at once.

[0007] Numerous innovations for portable battery chargers have been provided in the prior art, which will be described below in chronological order to show advancement in the art, and which are incorporated herein by reference thereto. Even though these innovations may be suitable for the individual purposes to which they address, nevertheless, they differ from the embodiments of the present invention in that they do not teach a portable docking station for powering multiple AC-powered battery chargers and multiple DC-powered battery chargers simultaneously.

(1) United States Patent Application Publication Number US 2003/0117104 A1 to Liao.

[0008] United States Patent Application Publication Number US 200/30117104 A1 published to Liao on Jun. 26, 2003 in U.S. class 320 and subclass 107 teaches a portable multi-function charger for electronic devices, which includes a body, a circuit section, an input end, an output end, an output cord, and a battery connector. The body has a cavity therein to receive the circuit section. The circuit section has a circuit board therein and a plurality of spring contacts. The input end, the output end, the output cord, and the battery connector are connected to the circuit board. A mounting stage is arranged on the outer surface of the body and has a plurality of contacts therein. The multi-function charger can be electrically connected to a notebook computer, a wall socket, a vehicle charger, or a battery for inputting electric power. The multi-

function charger can be used to simultaneously charge a plurality of portable electronic devices and a rechargeable battery.

(2) U.S. Pat. No. 6,614,206 B1 to Wong et al.

[0009] U.S. Pat. No. 6,614,206 B1 issued to Wong et al. on Sep. 2, 2003 in U.S. class 320 and subclass 136 teaches an apparatus for supplying power to electronic devices, which includes a housing, an electric power source connector coupled to the housing, an electronic circuit enclosed in the housing and electrically coupled to the power source connector, and a universal serial bus connector coupled to the housing and electrically coupled to the electronic circuit. The connector is capable of supplying electrical power to one or more electronic devices for battery charging. The electronic circuit is capable of controlling the charging of the batteries of more than one device and can be enabled to provide data communication between data devices. The apparatus may receive power from a utility power outlet or from another electronic device through the USB connector.

(3) U.S. Pat. No. 6,741,064 B2 to Liu et al.

[0010] U.S. Pat. No. 6,741,064 B2 issued to Liu et al. on May 25, 2004 in U.S. class 320 and subclass 107 teaches a power charging system for charging portable electric devices. The power charging system includes a plurality of transformers for transforming a plurality of different input voltages into standard DC voltage. The charging system also includes a power cord for inputting and outputting the standard DC voltage. The charging system also includes a plurality of converters for converting the standard DC voltage into the working voltage of the portable electric devices. Users connect the corresponding converters to the power cord and then connect the power cord to any one of the transformers to use the standard DC voltage to charge the portable electric devices.

(4) United States Patent Application Publication Number US 2006/0273757 A1 to Naguib.

[0011] United States Patent Application Publication Number US 2006/0273757 A1 published to Naguib on Dec. 7, 2006 in U.S. class 320 and subclass 107 teaches a portable electronic device case. The case can simultaneously be used as a solar charger for the portable devices, can combine any carrying case design with that of a solar charger into a single item, can detach the solar panels portion from the case when desired, can integrate the solar panels with a case design functioning as a regular carrying case, can be used with almost any type of portable device, and can also be applied to almost any type of briefcase, suitcase, or handheld device cover.

(5) United States Patent Application Publication Number US 2006/0280519 A1 to Mori et al.

[0012] United States Patent Application Publication Number US 2006/0280519 A1 published to Mori et al. on Dec. 14, 2006 in U.S. class 399 and subclass 116 teaches a charging station for charging portable electronic devices. In one preferred embodiment, the charging station includes a surge protector located therein. The charging station includes a base for housing the surge protector, a removable base cover that can be placed over the base, and a removable tray that can be placed over the base or over the base cover if the base cover is in place over the base. If desired, the charging station can be used in a disassembled form by placing the tray on one sur-

face and the base on another. If the charging station is used in this manner, the base cover can be placed over the base.

(6) U.S. Pat. No. 7,271,568 B2 to Purdy et al.

[0013] U.S. Pat. No. 7,271,568 B2 issued to Purdy et al. on Sep. 18, 2007 in U.S. class 320 and subclass 106 teaches a battery charger that may include a charger connector to be coupled to a corresponding device connector of a portable device including a rechargeable battery. The battery charger may also include a charging circuit connected to the charger connector, and a controller connected to the charger connector and the charging circuit. The controller may be for causing a portable device connected to the charger connector to identify its corresponding portable device type and its corresponding rechargeable battery type from among a plurality of different portable device types and different battery types, and for causing the charging circuit to charge the rechargeable battery based thereon.

(7) United States Patent Application Publication Number US 2007/0236169 A1 to Purdy et al.

[0014] United States Patent Application Publication Number US 2007/0236169 A1 published to Purdy et al. on Oct. 11, 2007 in U.S. class 320 and subclass 106 teaches a battery charger that may include a charger connector to be coupled to a corresponding device connector of a portable device including a rechargeable battery. The battery charger may also include a charging circuit connected to the charger connector, and a controller connected to the charger connector and the charging circuit. The controller may be for causing a portable device connected to the charger connector to identify its corresponding portable device type and its corresponding rechargeable battery type from among a plurality of different portable device types and different battery types, and for causing the charging circuit to charge the rechargeable battery based thereon.

(8) United States Patent Application Publication Number US 2009/0128091 A1 to Purdy et al.

[0015] United States Patent Application Publication Number US 2009/0128091 A1 published to Purdy et al. on May 21, 2009 in U.S. class 320 and subclass 106 teaches a battery charger that may include a charger connector to be coupled to a corresponding device connector of a portable device including a rechargeable battery. The battery charger may also include a charging circuit connected to the charger connector, and a controller connected to the charger connector and the charging circuit. The controller may be for causing a portable device connected to the charger connector to identify its corresponding portable device type and its corresponding rechargeable battery type from among a plurality of different portable device types and different battery types, and for causing the charging circuit to charge the rechargeable battery based thereon.

[0016] It is apparent that numerous innovations for portable battery chargers have been provided in the prior art that are adapted to be used. Furthermore, even though these innovations may be suitable for the specific individual purposes to which they address, however, they would not be suitable for the purposes of the embodiments of the present invention as heretofore described, namely, a portable docking station for

powering multiple AC-powered battery chargers and multiple DC-powered battery chargers simultaneously.

3. SUMMARY OF THE INVENTION

[0017] Thus, an object of the embodiments of the present invention is to provide a portable docking station for powering multiple AC-powered battery chargers and multiple DC-powered battery chargers simultaneously, which avoids the disadvantages of the prior art.

[0018] Briefly stated, another object of the embodiments of the present invention is to provide a portable docking station for powering multiple AC-powered battery chargers and multiple DC-powered battery chargers simultaneously. The portable docking station includes an enclosure, a plurality of female AC receptacles, an AC power circuit, a plurality of female DC receptacles, and a DC power circuit. The plurality of female AC receptacles and the plurality of female DC receptacles are accessible from the enclosure. The AC power circuit is contained within the enclosure and powers the plurality of female AC receptacles for powering the multiple AC-powered battery chargers. The DC power circuit is contained within the enclosure and powers the plurality of female DC receptacles for powering the multiple DC-powered battery chargers. The AC power circuit and the DC power circuit operate simultaneously for powering the multiple AC-powered battery chargers and the multiple DC-powered battery chargers, respectively, simultaneously.

[0019] The novel features considered characteristic of the embodiments of the present invention are set forth in the appended claims. The embodiments of the present invention themselves, however, both as to their construction and their method of operation together with additional objects and advantages thereof will be best understood from the following description of the specific embodiments when read and understood in connection with the accompanying drawing.

4. BRIEF DESCRIPTION OF THE DRAWING

[0020] The figures of the drawing are briefly described as follows:

[0021] FIG. 1 is a diagrammatic perspective view of the portable docking station of the embodiments of the present invention powering multiple AC-powered battery chargers and multiple DC-powered battery chargers simultaneously;

[0022] FIG. 2 is a schematic diagram of the portable docking station of the embodiments of the present invention;

[0023] FIG. 3 is an enlarged diagrammatic perspective view of the enclosure of the portable docking station of the embodiments of the present invention identified by ARROW 3 in FIG. 1;

[0024] FIG. 4 is a diagrammatic side elevational view taken generally in the direction of ARROW 4 in FIG. 3;

[0025] FIG. 5 is a diagrammatic front elevational view taken generally in the direction of ARROW 5 in FIG. 3;

[0026] FIG. 6 is a diagrammatic top plan view taken generally in the direction of ARROW 6 in FIG. 3;

[0027] FIG. 7 is a diagrammatic rear elevational view taken generally in the direction of ARROW 7 in FIG. 3;

[0028] FIG. 8 is an enlarged diagrammatic perspective view of an alternate embodiment of the enclosure of the portable docking station of the embodiments of the present invention identified by ARROW 8 in FIG. 1; and

[0029] FIG. 9 is a diagrammatic top plan view taken generally in the direction of ARROW 9 in FIG. 8.

5. LIST OF REFERENCE NUMERALS UTILIZED IN THE DRAWING

A. General

- [0030] 10 portable docking station of embodiments of present invention for powering multiple AC-powered battery chargers 12 and multiple DC-powered battery chargers 14 simultaneously
- [0031] 12 multiple AC-powered battery chargers
- [0032] 14 multiple DC-powered battery chargers

B. Overall Configuration of Portable Docking Station 10

- [0033] 16 enclosure
- [0034] 18 plurality of female AC receptacles for powering multiple AC-powered battery chargers 12
- [0035] 20 AC power circuit
- [0036] 22 plurality of female DC receptacles
- [0037] 24 DC power circuit for powering multiple DC-powered battery chargers 14

C. Specific Configuration of AC Power Circuit 20

- [0038] 26 AC power jack of AC power circuit 20
- [0039] 28 AC power cord for interfacing with female AC power source 30
- [0040] 30 female AC power source
- [0041] 32 surge protector of AC power circuit 20

D. Specific Configuration of DC Power Circuit 24

- [0042] 34 step-down transformer of DC power circuit 24
- [0043] 36 AC/DC convertor of DC power circuit 24
- [0044] 37 USB ports of plurality of female DC receptacles 22

E. Specific Configuration of Enclosure 16

- [0045] 38 bag of enclosure 16
- [0046] 40 base of bag 38 of enclosure 16
- [0047] 42 top of bag 38 of enclosure 16
- [0048] 44 front wall of base 40 of bag 38 of enclosure 16
- [0049] 46 pair of side walls of base 40 of bag 38 of enclosure 16
- [0050] 48 rear wall of base 40 of bag 38 of enclosure 16
- [0051] 50 side wall apertures in pair of side walls 46 of base 40 of bag 38 of enclosure 16
- [0052] 52 rear wall aperture in rear wall 48 of base 40 of bag 38 of enclosure 16
- [0053] 54 front wall apertures in front wall 44 of base 40 of bag 38 of enclosure 16
- [0054] 56 partition of bag 38 of enclosure 16
- [0055] 58 floor of top 42 of bag 38 of enclosure 16
- [0056] 60 front wall of top 42 of bag 38 of enclosure 16
- [0057] 62 pair of side walls of top 42 of bag 38 of enclosure 16
- [0058] 64 rear wall of top 42 of bag 38 of enclosure 16
- [0059] 66 top wall of top 42 of bag 38 of enclosure 16
- [0060] 68 chamber in top 42 of bag 38 of enclosure 16 for carrying various items 74, such as, but not limited to, AC power cord 28, etc.
- [0061] 70 opening in top wall 66 of top 42 of bag 38 of enclosure 16

- [0062] 72 zipper of opening 70 in top wall 66 of top 42 of bag 38 of enclosure 16

- [0063] 74 various items, such as, but not limited to, AC power cord 28, etc.

- [0064] 76 carrying strap of bag 38 of enclosure 16

- [0065] 78 front flap of bag 38 of enclosure 16

- [0066] 80 pair of side flaps of bag 38 of enclosure 16

- [0067] 82 rear flap of bag 38 of enclosure 16

F. Specific Configuration of Alternate Embodiment of Enclosure 116

- [0068] 116 enclosure

- [0069] 176 pair of carrying handles

- [0070] 150 floor apertures in floor 58 of top 42 of bag 38 of enclosure 16

- [0071] 118 additional plurality of female AC receptacles

- [0072] 180 pair of top flaps of bag 38 of enclosure 16

6. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A. General

[0073] Referring now to the figures, in which like numerals indicate like parts, and particularly to FIG. 1, which is a diagrammatic perspective view of the portable docking station of the embodiments of the present invention powering multiple AC-powered battery chargers and multiple DC-powered battery chargers simultaneously, the portable docking station of the embodiments of the present invention is shown generally at 10 for powering multiple AC-powered battery chargers 12 and multiple DC-powered battery chargers 14 simultaneously.

B. The Overall Configuration of the Portable Docking Station 10

[0074] The overall configuration of the portable docking station 10 can best be seen in FIGS. 1 and 2, which are, respectively, again, a diagrammatic perspective view of the portable docking station of the embodiments of the present invention powering multiple AC-powered battery chargers and multiple DC-powered battery chargers simultaneously, and a schematic diagram of the portable docking station of the embodiments of the present invention, and as such, will be discussed with reference thereto.

[0075] The portable docking station 10 comprises an enclosure 16, a plurality of female AC receptacles 18, an AC power circuit 20, a plurality of female DC receptacles 22, and a DC power circuit 24.

[0076] The plurality of female AC receptacles 18 and the plurality of female DC receptacles 22 are accessible from the enclosure 16. The AC power circuit 20 is contained within the enclosure 16 and powers the plurality of female AC receptacles 18 for powering the multiple AC-powered battery chargers 12. The DC power circuit 24 is contained within the enclosure 16 and powers the plurality of female DC receptacles 22 for powering the multiple DC-powered battery chargers 14. The AC power circuit 20 and the DC power circuit 24 operate simultaneously for powering the multiple

AC-powered battery chargers 12 and the multiple DC-powered battery chargers 14, respectively, simultaneously.

C. The Specific Configuration of the AC Power Circuit 20

[0077] As shown in FIG. 2, the AC power circuit 20 comprises an AC power jack 26. The AC power jack 26 of the AC power circuit 20 is accessible from the enclosure 16 and interfaces with a detachable AC power cord 28 for interfacing with a female AC power source 30.

[0078] The AC power circuit 20 further comprises a surge protector 32. The surge protector 32 of the AC power circuit 20 is contained within the enclosure 16 and electrically communicates with both the AC power jack 26 of the AC power circuit 20 and the plurality of female AC receptacles 18.

D. The Specific Configuration of the DC Power Circuit 24

[0079] As further shown in FIG. 2, the DC power circuit 24 comprises a step-down transformer 34. The step-down transformer 34 of the DC power circuit 24 is contained within the enclosure 16 and electrically communicates with the plurality of female AC receptacles 18 for reducing voltage outputted therefrom.

[0080] The DC power circuit 24 further comprises an AC/DC convertor 36. The AC/DC convertor 36 of the DC power circuit 24 is contained within the enclosure 16 and electrically communicates with the step-down transformer 34 of the DC power circuit 24 and the plurality of female DC receptacles 22 for converting AC voltage inputted therein to DC voltage outputted therefrom.

[0081] The plurality of female DC receptacles 22 are USB ports 37.

E. The Specific Configuration of the Enclosure 16

[0082] The specific configuration of the enclosure 16 can best be seen in FIGS. 3-7, which are, respectively, an enlarged diagrammatic perspective view of the enclosure of the portable docking station of the embodiments of the present invention identified by ARROW 3 in FIG. 1, a diagrammatic side elevational view taken generally in the direction of ARROW 4 in FIG. 3, a diagrammatic front elevational view taken generally in the direction of ARROW 5 in FIG. 3, a diagrammatic top plan view taken generally in the direction of ARROW 6 in FIG. 3, and a diagrammatic rear elevational view taken generally in the direction of ARROW 7 in FIG. 3, and as such, will be discussed with reference thereto.

[0083] The enclosure 16 comprises a bag 38. The bag 38 of the enclosure 16 has a base 40 and a top 42. The top 42 of the bag 38 of the enclosure 16 extends upwardly from the base 40 of the bag 38 of the enclosure 16.

[0084] The base 40 of the bag 38 of the enclosure 16 is rigid, while the top 42 of the bag 38 of the enclosure 16 is flexible, such as, but not limited to, a fabric.

[0085] The base 40 of the bag 38 of the enclosure 16 has a front wall 44, a pair of side walls 46, and a rear wall 48.

[0086] The pair of side walls 46 of the base 40 of the bag 38 of the enclosure 16 have side wall apertures 50. The side wall apertures 50 in the pair of side walls 46 of the base 40 of the bag 38 of the enclosure 16 snapingly accept the plurality of female AC receptacles 18, respectively, that are accessible therefrom.

[0087] The surge protector 32 of the AC power circuit 20, the step-down transformer 34 of the DC power circuit 24, and the AC/DC convertor 36 of the DC power circuit 24 are contained within the base 40 of the bag 38 of the enclosure 16.

[0088] The rear wall 48 of the base 40 of the bag 38 of the enclosure 16 has a rear wall aperture 52. The rear wall aperture 52 in the rear wall 48 of the base 40 of the bag 38 of the enclosure 16 snapingly accepts the AC power jack 26 of the AC power circuit 20 that is accessible therefrom.

[0089] The front wall 44 of the base 40 of the bag 38 of the enclosure 16 has front wall apertures 54. The front wall apertures 54 in the front wall 44 of the base 40 of the bag 38 of the enclosure 16 snapingly accept the plurality of female DC receptacles 22, respectively, that are accessible therefrom.

[0090] The bag 38 of the enclosure 16 further has a partition 56. The partition 56 of the bag 38 of the enclosure 16 is contained within the bag 38 of the enclosure 16 and separates the base 40 of the bag 38 of the enclosure 16 from the top 42 of the bag 38 of the enclosure 16, to thereby form a floor 58 for the top 42 of the bag 38 of the enclosure 16.

[0091] The top 42 of the bag 38 of the enclosure 16 has a front wall 60, a pair of side walls 62, a rear wall 64, and a top wall 66.

[0092] The top 42 of the bag 38 of the enclosure 16 defines a chamber 68. The chamber 68 in the top 42 of the bag 38 of the enclosure 16 is for carrying various items 74, such as, but not limited to, the AC power cord 28, etc., and is accessible from an opening 70 in the top wall 66 of the top 42 of the bag 38 of the enclosure 16, which is selectively opened and closed by a zipper 72.

[0093] The bag 38 of the enclosure 16 further has a carrying strap 76. The carrying strap 76 of the bag 38 of the enclosure 16 extends outwardly from the front wall 60 of the top 42 of the bag 38 of the enclosure 16 and substantially aligns with the front wall 44 of the base 40 of the bag 38 of the enclosure 16.

[0094] The bag 38 of the enclosure 16 further has a front flap 78. The front flap 78 of the bag 38 of the enclosure 16 is flexible, such as, but not limited to, a fabric, and hingedly depends from the front wall 60 of the top 42 of the bag 38 of the enclosure 16 to selectively cover the front wall 44 of the base 40 of the bag 38 of the enclosure 16 to protect the plurality of female DC receptacles 22 when not in use.

[0095] The bag 38 of the enclosure 16 further has a pair of side flaps 80. The pair of side flaps 80 of the bag 38 of the enclosure 16 are flexible, such as, but not limited to, a fabric, and hingedly depend from the pair of side walls 62 of the top 42 of the bag 38 of the enclosure 16, respectively, to selectively cover the pair of side walls 46 of the base 40 of the bag 38 of the enclosure 16 and protect the plurality of female AC receptacles 18 when not in use.

[0096] The bag 38 of the enclosure 16 further has a rear flap 82. The rear flap 82 of the bag 38 of the enclosure 16 is flexible, such as, but not limited to, a fabric, and hingedly depends from the rear wall 64 of the top 42 of the bag 38 of the enclosure 16 to selectively cover the rear wall 48 of the base 40 of the bag 38 of the enclosure 16 and protect the AC power jack 26 of the AC power circuit 20 when not in use.

F. The Specific Configuration of an Alternate Embodiment of the Enclosure 116

[0097] The specific configuration of an alternate embodiment of the enclosure 116 can best be seen in FIGS. 8 and 9, which are, respectively, an enlarged diagrammatic perspec-

tive view of an alternate embodiment of the enclosure of the portable docking station of the embodiments of the present invention identified by ARROW 8 in FIG. 1, and a diagrammatic top plan view taken generally in the direction of ARROW 9 in FIG. 8, and as such, will be discussed with reference thereto.

[0098] The configuration of an alternate embodiment of the enclosure 116 is similar to the enclosure 16, except:

[0099] The carrying strap 76 of the bag 38 of the enclosure 16 is replaced by a pair of carrying handles 176 that extend upwardly from the pair of side walls 62 of the top 42 of the enclosure 16, respectively;

[0100] The zipper 72 is removed leaving opening 70 in the top wall 66 of the top 42 of the bag 38 of the enclosure 16 always open;

[0101] The floor 58 of the top 42 of the bag 38 of the enclosure 16 has floor apertures 150 therein;

[0102] An additional plurality of female AC receptacles 118 are snapingly accepted in the floor apertures 150 of the floor 58 of the top 42 of the bag 38 of the enclosure 16, respectively, and which are accessible therefrom; and

[0103] A pair of top flaps 180 of the bag 38 of the enclosure 16 are flexible, such as, but not limited to, a fabric, and extend hingedly inwardly from the pair of side walls 62 of the top 42 of the bag 38 of the enclosure 16, respectively, to selectively cover the floor 58 of the top 42 of the bag 38 of the enclosure 16 and protect the additional plurality of female AC receptacles 118 when not in use.

G. The Impressions

[0104] It will be understood that each of the elements described above or two or more together may also find a useful application in other types of constructions differing from the types described above.

[0105] While the embodiments of the present invention have been illustrated and described as embodied in a portable docking station for powering multiple AC-powered battery chargers and multiple DC-powered battery chargers simultaneously, however, they are not limited to the details shown, since it will be understood that various omissions, modifications, substitutions, and changes in the forms and details of the embodiments of the present invention illustrated and their operation can be made by those skilled in the art without departing in any way from the spirit of the embodiments of the present invention.

[0106] Without further analysis the foregoing will so fully reveal the gist of the embodiments of the present invention that others can by applying current knowledge readily adapt them for various applications without omitting features that from the standpoint of prior art fairly constitute characteristics of the generic or specific aspects of the embodiments of the present invention.

The invention claimed is:

1. A portable docking station for powering multiple AC-powered battery chargers and multiple DC-powered battery chargers simultaneously, comprising:

- a) an enclosure;
- b) a plurality of female AC receptacles;
- c) an AC power circuit;
- d) a plurality of female DC receptacles; and
- e) a DC power circuit;

wherein said plurality of female AC receptacles are accessible from said enclosure;

wherein said plurality of female DC receptacles are accessible from said enclosure;

wherein said AC power circuit is contained within said enclosure;

wherein said AC power circuit powers said plurality of female AC receptacles for powering the multiple AC-powered battery chargers;

wherein said DC power circuit is contained within said enclosure;

wherein said DC power circuit powers said plurality of female DC receptacles for powering the multiple DC-powered battery chargers; and

wherein said AC power circuit and said DC power circuit operate simultaneously for powering the multiple AC-powered battery chargers and the multiple DC-powered battery chargers, respectively, simultaneously.

2. The station of claim 1, wherein said AC power circuit comprises an AC power jack;

wherein said AC power jack of said AC power circuit is accessible from said enclosure; and

wherein said AC power jack of said AC power circuit interfaces with a detachable AC power cord for interfacing with a female AC power source.

3. The station of claim 2, wherein said AC power circuit comprises a surge protector;

wherein said surge protector of said AC power circuit is contained within said enclosure; and

wherein said surge protector of said AC power circuit electrically communicates with both said AC power jack of said AC power circuit and said plurality of female AC receptacles.

4. The station of claim 3, wherein said DC power circuit comprises a step-down transformer;

wherein said step-down transformer of said DC power circuit is contained within said enclosure; and

wherein said step-down transformer of said DC power circuit electrically communicates with said plurality of female AC receptacles for reducing voltage outputted therefrom.

5. The station of claim 4, wherein said DC power circuit comprises an AC/DC convertor;

wherein said AC/DC convertor of said DC power circuit is contained within said enclosure; and

wherein said AC/DC convertor of said DC power circuit electrically communicates with said step-down transformer of said DC power circuit and said plurality of female DC receptacles for converting AC voltage inputted therein to DC voltage outputted therefrom.

6. The station of claim 1, wherein said plurality of female DC receptacles are USB ports.

7. The station of claim 5, wherein said enclosure comprises a bag;

wherein said bag of said enclosure has a base;

wherein said bag of said enclosure has a top; and

wherein said top of said bag of said enclosure extends upwardly from said base of said bag of said enclosure.

8. The station of claim 7, wherein said base of said bag of said enclosure is rigid; and

wherein said top of said bag of said enclosure is flexible.

9. The station of claim 7, wherein said base of said bag of said enclosure has a pair of side walls;

wherein said pair of side walls of said base of said bag of said enclosure have side wall apertures; and
 wherein said side wall apertures in said pair of side walls of said base of said bag of said enclosure snapingly accept said plurality of female AC receptacles, respectively, that are accessible therefrom.

10. The station of claim 7, wherein said surge protector of said AC power circuit is contained within said base of said bag of said enclosure;

wherein said step-down transformer of said DC power circuit is contained within said base of said bag of said enclosure; and

wherein said AC/DC convertor of said DC power circuit is contained within said base of said bag of said enclosure.

11. The station of claim 7, wherein said base of said bag of said enclosure has a rear wall;

wherein said rear wall of said base of said bag of said enclosure has a rear wall aperture; and

wherein said rear wall aperture in said rear wall of said base of said bag of said enclosure snapingly accepts said AC power jack of said AC power circuit that is accessible therefrom.

12. The station of claim 7, wherein said base of said bag of said enclosure has a front wall;

wherein said front wall of said base of said bag of said enclosure has front wall apertures; and

wherein said front wall apertures in said front wall of said base of said bag of said enclosure snapingly accept said plurality of female DC receptacles, respectively, that are accessible therefrom.

13. The station of claim 7, wherein said bag of said enclosure has a partition;

wherein said partition of said bag of said enclosure is contained within said bag of said enclosure; and

wherein said partition of said bag of said enclosure separates said base of said bag of said enclosure from said top of said bag of said enclosure, to thereby form a floor of said top of said bag of said enclosure.

14. The station of claim 7, wherein said top of said bag of said enclosure has a top wall;

wherein said top of said bag of said enclosure defines a chamber;

wherein said chamber in said top of said bag of said enclosure is accessible from an opening in said top wall of said top of said bag of said enclosure that can be selectively opened and closed by a zipper; and

wherein said chamber in said top of said bag of said enclosure is for carrying various items.

15. The station of claim 12, wherein said bag of said enclosure has a front flap; and

wherein said front flap of said bag of said enclosure depends from said front wall of said top of said bag of said enclosure to selectively cover said front wall of said

base of said bag of said enclosure and protect said plurality of female DC receptacles when not in use.

16. The station of claim 9, wherein said top of said bag of said enclosure has a pair of side walls;

wherein said bag of said enclosure has a pair of side flaps; and

wherein said pair of side flaps of said bag of said enclosure depend from said pair of side walls of said top of said bag of said enclosure, respectively, to selectively cover said pair of side walls of said base of said bag of said enclosure and protect said plurality of female AC receptacles when not in use.

17. The station of claim 11, wherein said top of said bag of said enclosure has a rear wall;

wherein said bag of said enclosure has a rear flap; and

wherein said rear flap of said bag of said enclosure depends from said rear wall of said top of said bag of said enclosure to selectively cover said rear wall of said base of said bag of said enclosure and protect said AC power jack of said AC power circuit when not in use.

18. The station of claim 7, wherein said top of said bag of said enclosure has a front wall;

wherein said bag of said enclosure has a carrying strap; and

wherein said carrying strap of said bag of said enclosure extends outwardly from said front wall of said top of said bag of said enclosure and substantially aligns with said front wall of said base of said bag of said enclosure.

19. The station of claim 7, wherein said bag of said enclosure has a pair of side walls;

wherein said bag of said enclosure has a pair of carrying handles; and

wherein said pair of carrying handles of said bag of said enclosure extend upwardly from said pair of side walls of said top of said bag of said enclosure, respectively.

20. The station of claim 14, wherein said opening in said top wall of said top of said bag of said enclosure is always open.

21. The station of claim 13, wherein said floor of said top of said bag of said enclosure has floor apertures therein.

22. The station of claim 21, further comprising an additional plurality of female AC receptacles; and

wherein said additional plurality of female AC receptacles are snapingly accepted in said floor apertures of said floor of said top of said bag of said enclosure, respectively, that are accessible therefrom.

23. The station of claim 22, further comprising a pair of top flaps; and

wherein said pair of top flaps extend hingedly inwardly from said pair of side walls of said top of said bag of said enclosure, respectively, to selectively cover said floor of said top of said bag of said enclosure and protect said additional plurality of female AC receptacles when not in use.

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