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(54) **PARCEL DELIVERY SYSTEM AND DELIVERY APPARATUS**

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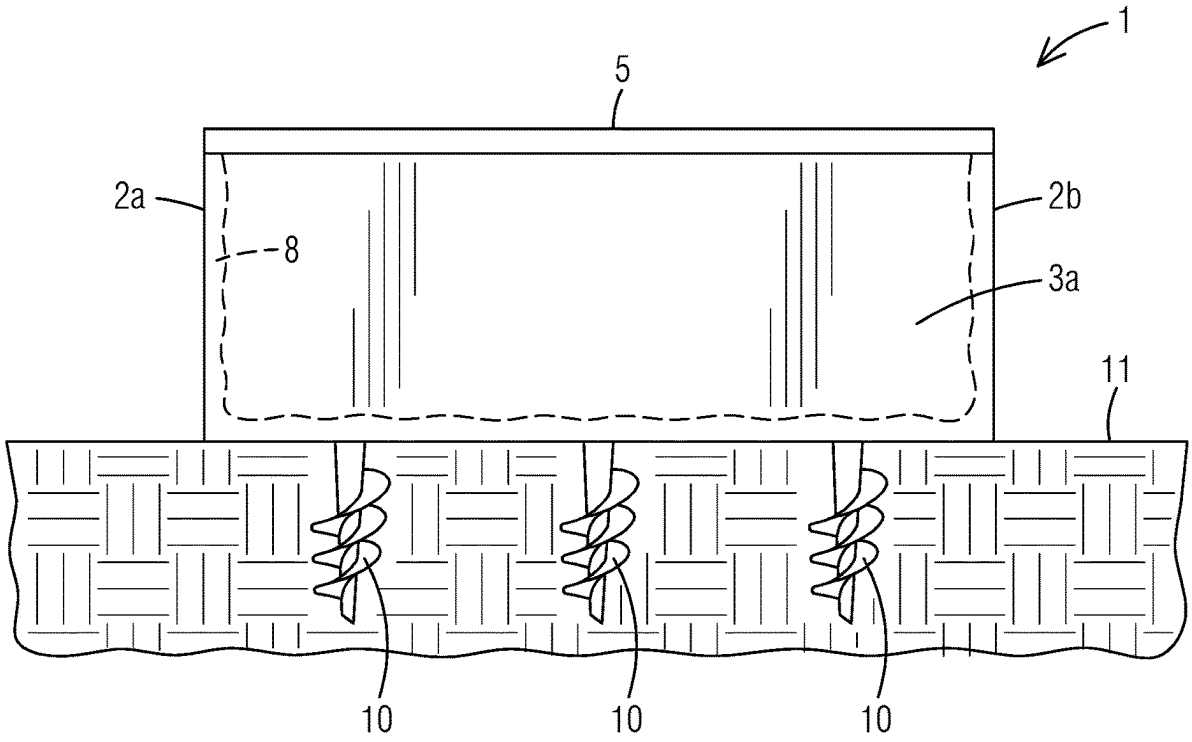
(57) **ABSTRACT**

A parcel delivery system, metho and apparatus having a delivery receptacle **1** that is securely affixed to a ground surface **11** located at a consumer's residence **12** or place of business that provides a location signal to a delivery vehicle **22** which has a lid **5** that can be opened by a signal from a delivery vehicle driver to drop in a parcel and closed by another signal while activating an App to notify a consumer with details that a parcel has been delivered. The delivery receptacle would preferably have cushioning material **8** on interior walls to allow a driver to toss a parcel even though unpackaged into the receptacle without damage, thereby making protective packaging unnecessary. A solar panel **21** with battery provides electrical power to the receptacle.



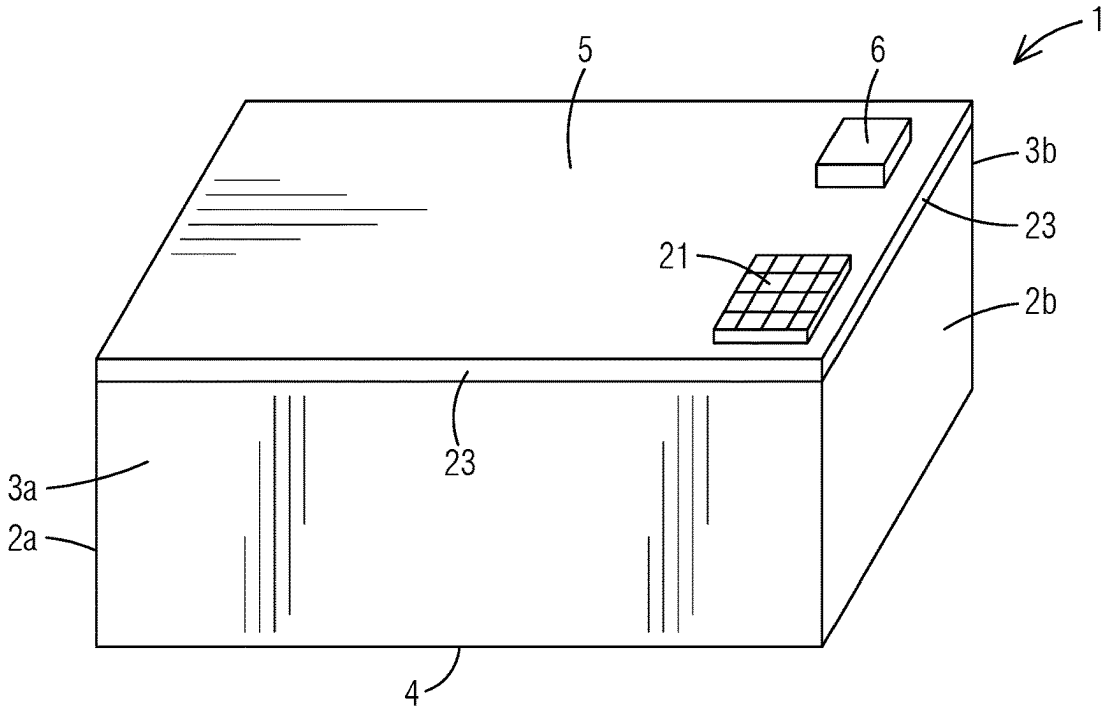


FIG. 1

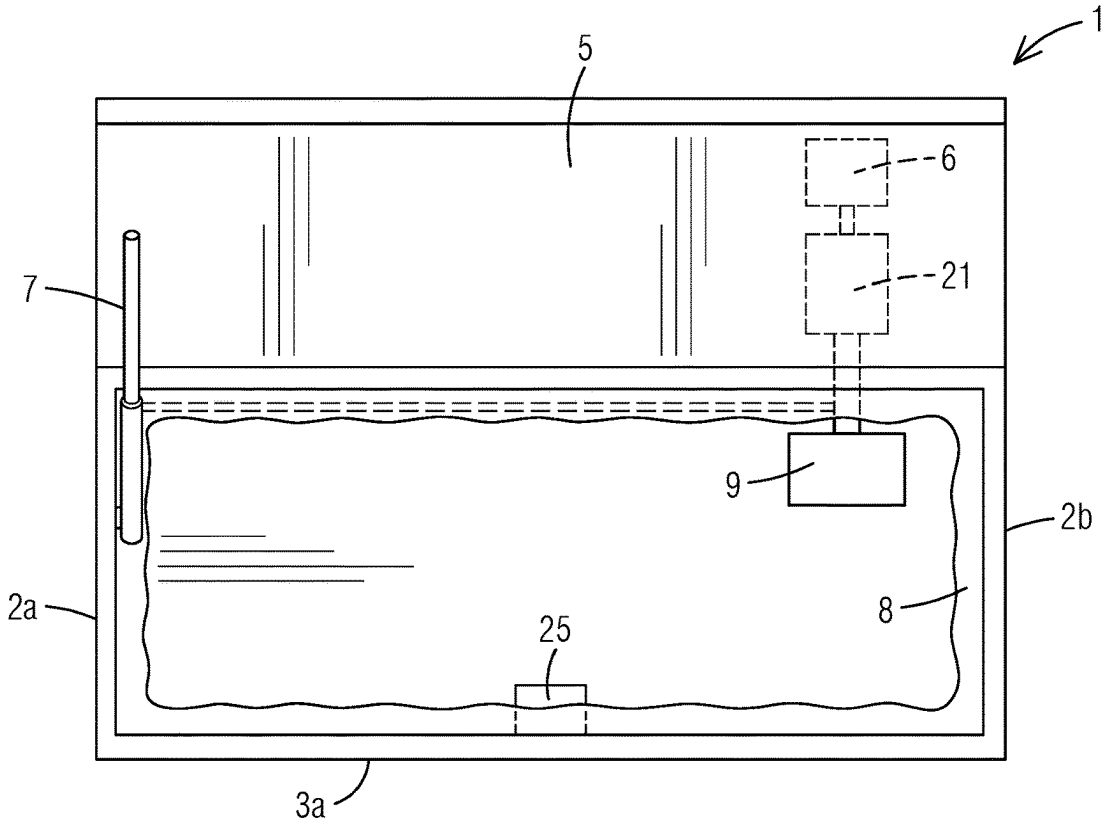


FIG. 2

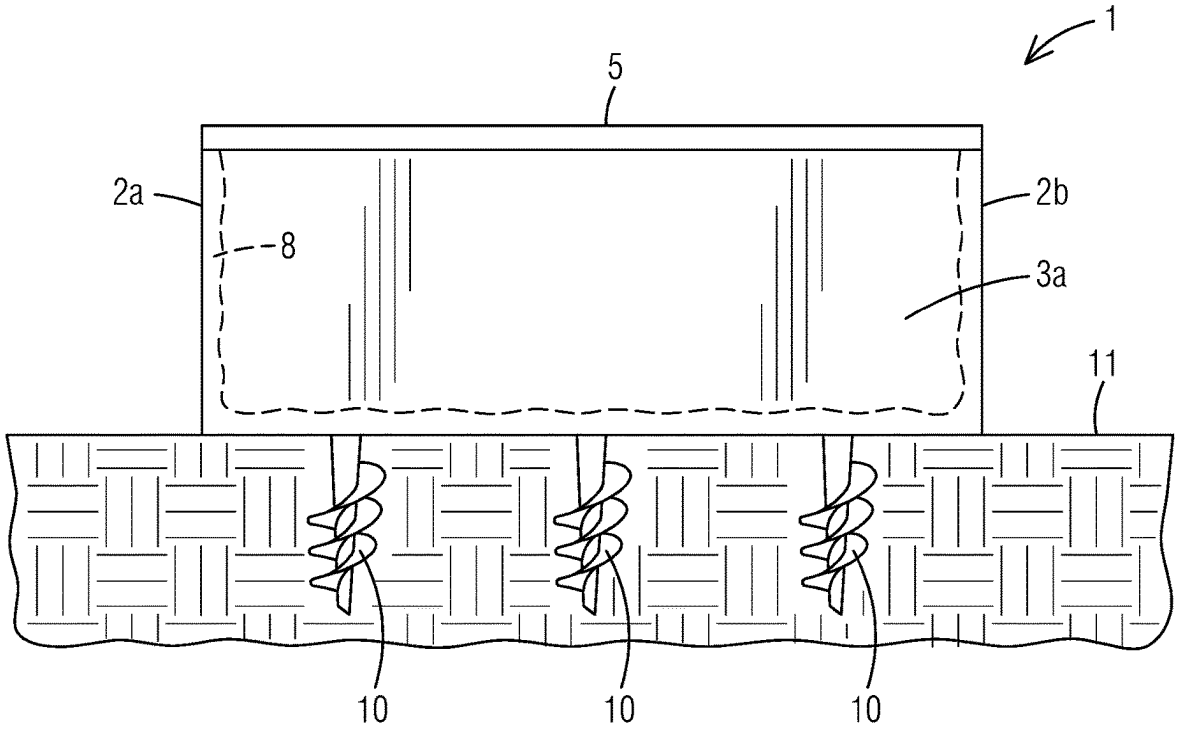


FIG. 3

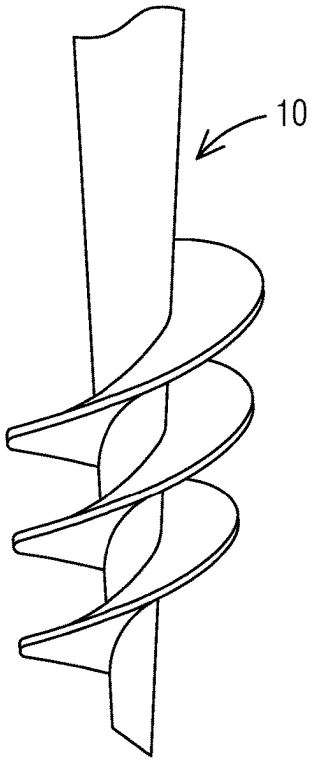


FIG. 4

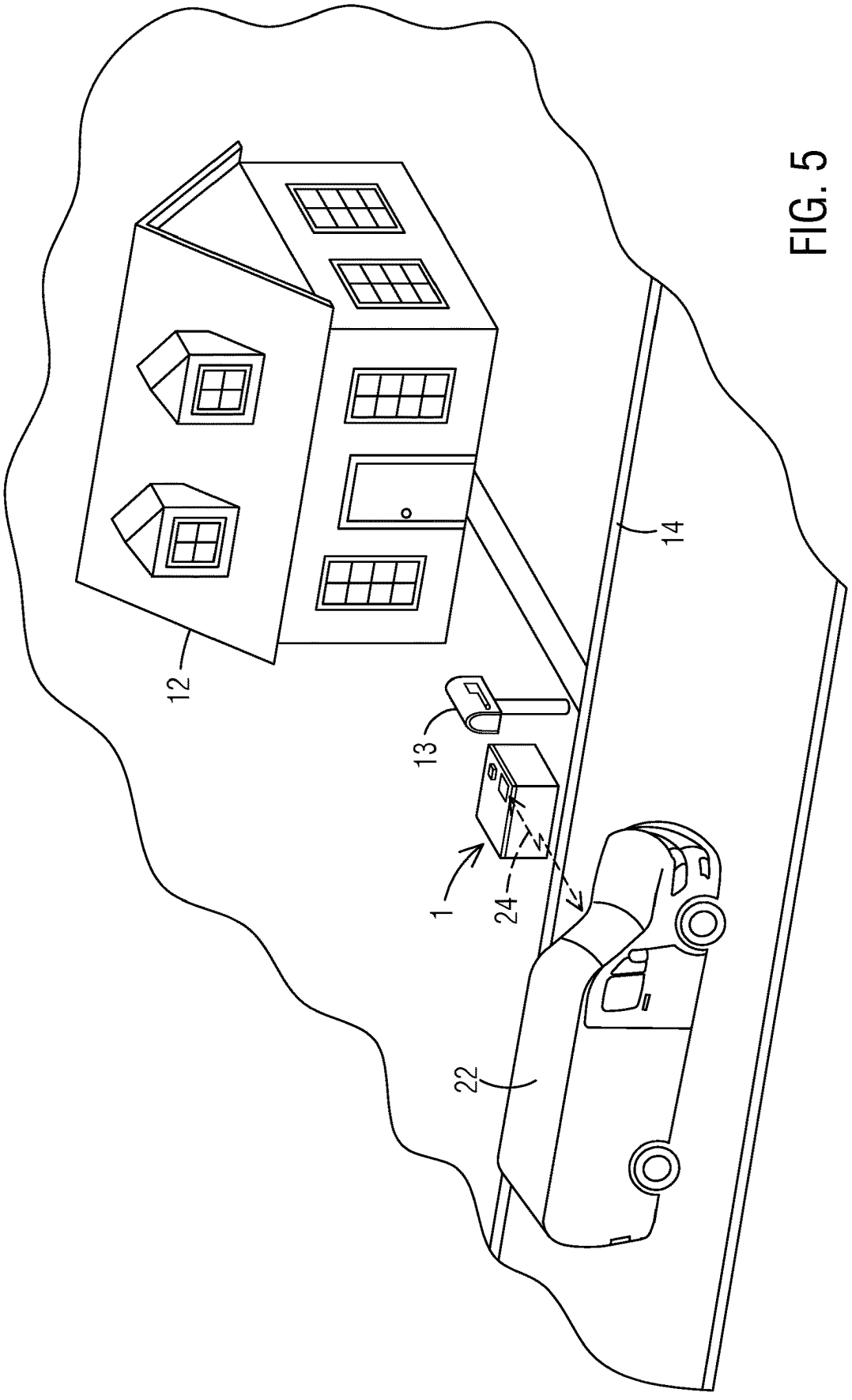


FIG. 5

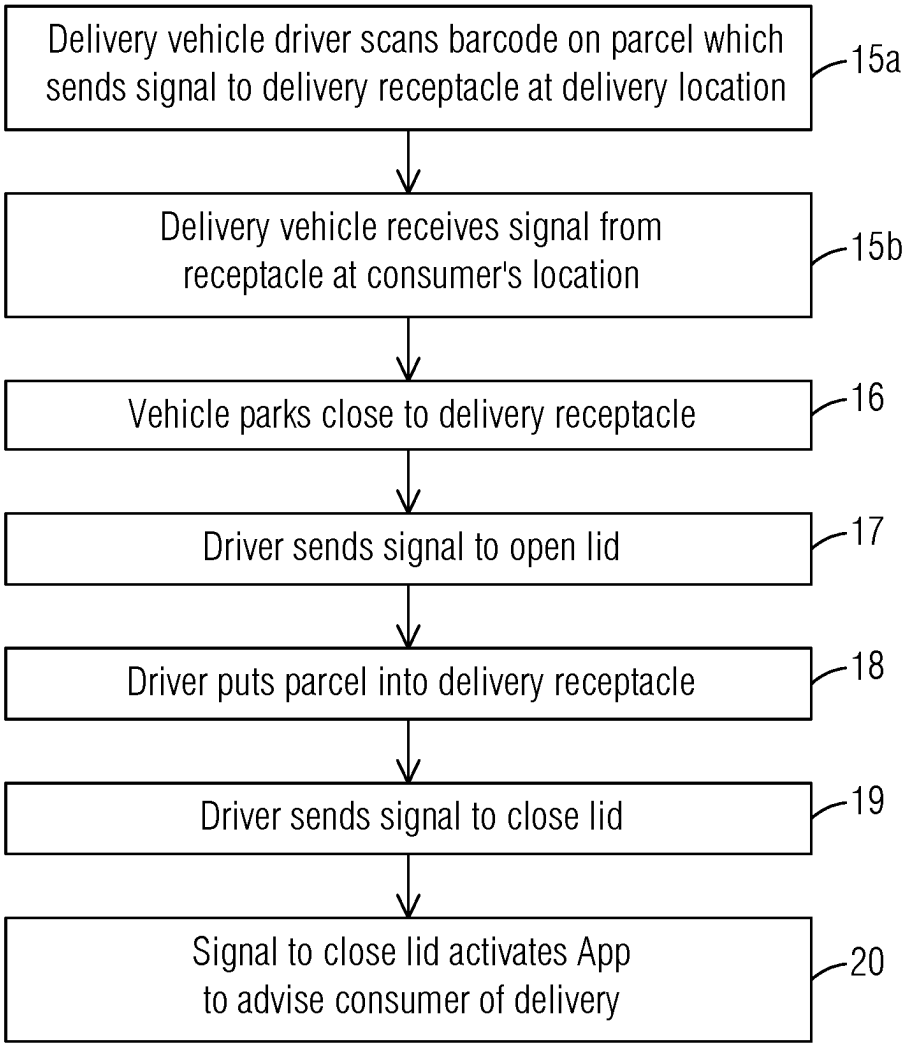

Delivery vehicle driver scans barcode on parcel which sends signal to delivery receptacle at delivery location
15a
Delivery vehicle receives signal from receptacle at consumer's location
15b
Vehicle parks close to delivery receptacle
16
Driver sends signal to open lid
17
Driver puts parcel into delivery receptacle
18
Driver sends signal to close lid
19
Signal to close lid activates App to advise consumer of delivery
20

FIG. 6

PARCEL DELIVERY SYSTEM AND DELIVERY APPARATUS

BACKGROUND OF THE INVENTION

[0001] This invention relates generally to parcel delivery methods and apparatuses and, more particularly, to a parcel delivery system and delivery receptacle apparatus that eliminates the need for and expense of protective cardboard packaging for parcels being delivered to a consumer's residence or place of business.

[0002] Currently, parcels being delivered by companies, such as Amazon, Federal Express, UPS and other companies, are required to be enclosed in protective packaging, such as cardboard boxes, to prevent damage to items in said parcels from exposure to weather and other conditions. Such packaging requirements increase the expense of delivered items to the consumer and also consume more space in a delivery company's vehicle, thereby reducing delivery parcel capacity and capability per vehicle. Even furthermore, such packaging requirements consume large amounts of paper and cardboard, thereby presenting an environmental issue. Thus, there is a need for a parcel delivery system that substantially eliminates the need for expensive and bulky protective packaging.

[0003] In addition, current practice in parcel delivery requires delivery persons to leave their delivery vehicles for each delivery to place parcels in a location at a residence or business where it will be noticed by a consumer. Such a practice consumes significant time for a delivery person and reduces the number of parcels that can be delivered. Thus, there is a need for a parcel delivery system that substantially reduces the time for making deliveries by eliminating the need for drivers to leave their vehicle and find a drop off location.

[0004] Also, although address applications such as Waze and Google assist a delivery person in locating a delivery address, currently delivery persons can have difficulty locating a specific location to drop off a parcel, particularly in businesses and multi-family residences. The latter difficulty can require additional time for the delivery persons to find the specific location to drop off the parcel. Thus, a need exists for a parcel delivery system and delivery receptacle that eliminates the difficulty of locating a location to drop off a parcel.

[0005] Furthermore, in most cases current delivery practice is for delivery persons to leave a parcel in an open unprotected area outside a consumer's residence or place of business. Such practice exposes the parcel and product to damage from weather or theft. Thus, a need exists for a parcel delivery system and apparatus to prevent damage to and theft of parcels.

SUMMARY OF THE INVENTION

[0006] The primary object of the present invention is to provide a parcel delivery system and apparatus that substantially eliminates the need for expensive and bulky protective packaging made of cardboard or other materials.

[0007] Another object of the present invention is to provide a parcel delivery system and apparatus that substantially reduces the time for making deliveries by eliminating the need for delivery drivers to leave their vehicles.

[0008] A further object of the present invention is to provide a parcel delivery system and apparatus that eliminates the difficulty of locating a location to drop off a parcel.

[0009] An additional object of the present invention is to provide a parcel delivery system and apparatus to prevent damage to and theft of parcels.

[0010] The present invention fulfills the above and other objects by providing method for delivering parcels at a consumer's residence or place of business by remotely activating and opening via smart device a lid on a delivery receptacle located at a consumer's residence or place of business to receive parcels, said delivery receptacle being fixedly secured to a ground surface and having four walls, a bottom and a lid with cushioning material on the bottom and four walls. The lid of the delivery receptacle is closed and locked vis smart device to secure a parcel or parcels within the delivery receptacle. Upon closure of the receptacle lid a software application sends a delivery signal to the consumer that a parcel has been received within the receptacle and further identifying from whom the parcels or parcels have been delivered.

[0011] The above and other objects, features and advantages of the present invention should become even more readily apparent to those skilled in the art upon a reading of the following detailed description in conjunction with the drawings wherein there is shown and described illustrative embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] In the following detailed description, reference will be made to the attached drawings in which:

[0013] FIG. **1** is an outer perspective view of the delivery receptacle of the parcel delivery system of present invention;

[0014] FIG. **2** is an inside top view of the delivery receptacle of the parcel delivery system of present invention with the lid open;

[0015] FIG. **3** is a side partial cutaway view of the delivery receptacle of the parcel delivery system of present invention showing a ground surface securement;

[0016] FIG. **4** is a side view of an augur type screw securement device to attach the delivery receptacle of the parcel delivery system of present invention to a ground surface;

[0017] FIG. **5** is a perspective view of a residence showing a preferred placement of the delivery receptacle of the parcel delivery system of present invention; and

[0018] FIG. **6** is a flow chart of the method of the parcel delivery system employing the delivery receptacle of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0019] For purposes of describing the preferred embodiment, the terminology used in reference to the numbered components in the drawings is as follows:

[0020] **1**. delivery receptacle, generally

[0021] **2***a,b*.two sides

[0022] **3***a,b*.front side/back side load

[0023] **4**. bottom

[0024] **5**. lid

[0025] **6**. transreceiver and electronics box

[0026] **7**. lid opening arm

[0027] **8**. cushioning material

[0028] **9**. power source

[0029] **10**. augur type ground surface securement screws

[0030] **11**. ground surface

[0031] **12**. residence

[0032] **13**. mailbox

[0033] **14**. curb

[0034] **15***a*. delivery vehicle driver scans barcode on parcel sending signal to applicable delivery receptacle

[0035] **15***b*. delivery vehicle driver receives signal from delivery receptacle location

[0036] **16**. delivery vehicle parks close to delivery receptacle

[0037] **17**. driver sends signal to open lid

[0038] **18**. driver puts parcel into delivery receptacle

[0039] **19**. driver sends signal to close lid

[0040] **20**. signal to close lid activates app to advise consumer of delivery details

[0041] **21**. solar panel

[0042] **22**. delivery vehicle

[0043] **23**. reflective lid edge

[0044] **24**. light on delivery vehicle

[0045] **25**. light inside delivery receptacle

[0046] Referring to the drawing figures, FIG. **1** illustrates a perspective view of the delivery receptacle of the parcel delivery system of the present invention, said receptacle **1** having four sides-two opposing sides **2***a* and **2***b*, a front side **3***a*; a backside **3***b*, a bottom **4** and a top lid **5**. The receptacle **1** would also have a transreceiver/electronics box **6** on the lid **5** or other location on the receptacle **1** to send and receive signals from the delivery vehicle, driver and consumer. Also, the lid **5** has a solar panel **21** on it to maintain a power source **9** in a charged condition inside the receptacle **1**. The lid **5** would preferably have a reflective edge **23**, which could be reflective tape, paint or other reflective material so the receptacle **1** could be more easily seen by a delivery driver, particularly during nighttime deliveries. Although not shown in FIG. **1**, the receptacle may also have similar reflective means inside the interior of the receptacle **1**.

[0047] FIG. **2** illustrates a top view of the delivery receptacle **1** of the parcel delivery system of the present invention with the top lid **5** in an open position raised by an arm **7**, which may be hydraulic, when activated by a signal received by the transceiver **6** from the driver of a delivery vehicle. The power source **9** is electrically connected to and provides power to the transceiver/electronics box **6** and the lifting arm **7**. The inner walls and bottom of the receptacle are lined by a cushioning material **8**, which may be foam, bubble wrap or other material, in order that delivery driver may toss a parcel into the receptacle **1** without damage to the parcel. Optionally, a light **25** inside the receptacle **1** connected to the solar-powered battery **9** would illuminate when the lid **5** is opened to provide light to the interior of the receptacle **1** for appropriate placement of parcels.

[0048] FIG. **3** illustrates a side partial cutaway view of the delivery receptacle **1** of the parcel delivery system of the present invention showing in addition to other components previously discussed, the securement screws **10** to fixedly secure the delivery receptacle **1** into a ground surface **11**. Although the securement screws **10** could be augur type as shown other securement devise could be used depending on the ground surface just so long as the delivery receptacle **1** can only be removed by access to the inside of the receptacle **1**.

[0049] FIG. **4** illustrates a side view of an augur type securement screw **10** that might be used to secure the delivery receptacle **1** of the parcel delivery system of the present invention to a round surface **11**.

[0050] FIG. **5** illustrates a top perspective view a residential location **12** showing where a preferred location for the delivery receptacle **1** of the parcel delivery system. As shown, the delivery receptacle **1** would be located near the curb **14**, perhaps near a mailbox **13** if a residence has one. In such preferred location a driver in a delivery vehicle **22** could approach close enough to toss or place a parcel into the receptacle **1** without leaving the delivery vehicle **22**. Optionally, the delivery vehicle **22** may also have a light **24** directed at a 45-degree angle to assist a delivery driver in locating the receptacle **1** by reflection from the reflective edge **23** of the lid **5** shown in FIG. **1**, especially during nighttime deliveries.

[0051] FIG. **6** is a flow chart illustrating a method of the parcel delivery system and delivery apparatus of the present invention. The method begins in block **15***a* when a delivery vehicle driver scans a barcode on a parcel to be delivered which in turn sends a signal via smart device like a mobile phone to the delivery receptacle at the delivery location **15***a*. Then in block **15***b* the delivery vehicle receives a sounding signal back from the delivery receptacle acknowledging receipt of the signal and provides a honing sound which increases in intensity the closer the delivery gets to the applicable delivery receptacle. The sounding signal and honing sound could be activated by a delivery driver when necessary to locate the receptacle **1**. Optionally, in place of or in addition to a honing signal when the delivery driver sends a signal via smart device to the delivery receptacle at the delivery location, a light is illuminated on the delivery receptacle which also assists the delivery driver as to the location of the receptacle. Then in block **16** the delivery vehicles parks as close as possible to the delivery receptacle located near the curb and in block **17** sends a signal to the receptacle to open the lid. Then in block **18** the driver puts the parcel into the open receptacle, preferably by tossing the parcel if close enough to the receptacle. Then, the driver signals the receptable to close the lid at **19** which also activates via a software application to advise the consumer of the delivery details.

[0052] Thus, as described above in a preferred embodiment, a parcel delivery system and delivery receptacle apparatus is provided that would save time and thus expense associated with current delivery practices, be environmentally friendly by elimination a need for expensive cardboard and other protective parcel packaging and would be secure from theft.

[0053] It is to be understood that while a preferred embodiment of the invention is described, it is not to be limited to the specific form or arrangement of parts herein described and shown. It will be apparent to those skilled in the art that various changes may be made without departing from the scope of the invention and the invention is not to be considered limited to what is shown and described in the specification and/or drawings.

Having thus described my invention, I claim:

1. A locking parcel delivery receptacle for receiving a delivered parcel at a consumer's residence of place of business comprising:

a delivery receptacle having a plurality of walls, a bottom and a lid forming an interior of sufficient size to receive

a variety of parcels, said delivery receptacle being fixedly attached to a ground surface;

an electrical power source for opening the lid and fulfilling other electrical requirements of the receptacle;

a remotely activated lid opening, closing and locking apparatus within the delivery receptacle, said apparatus having at least one lifting; and

a software application running on smart devices of a delivery company and the consumer, to activate opening and closing of the lid and notifying a consumer when a parcel has been delivered.

2. The delivery receptacle of claim **1** wherein the electrical power source is a solar-powered battery charged by a solar panel on an exterior of the receptacle.

3. The delivery receptacle of claim **1** further comprising a light in an interior of the receptacle which is activated when the lid is opened.

4. The delivery receptacle of claim **1** further comprising light reflective material on an edge of the lid.

5. The delivery receptacle of claim **1** wherein the receptacle is fixedly secured to a ground surface by augur-type screws in the bottom.

6. The delivery receptacle of claim **1** further comprising cushioning material on the interior to prevent damage to parcels placed in the receptacle.

7. A method for delivering parcels at a consumer's residence or place of business, said method comprising:

remotely activating and opening via smart device a lid on a delivery receptacle located at a consumer's residence or place of business to receive parcels, said delivery receptacle being fixedly secured to a ground surface and having four walls, a bottom and a lid with cushioning material on the bottom and four walls;

closing and locking via smart device the lid to secure a parcel or parcels within the delivery receptacle; and

sending via a software application a delivery signal to the consumer that a parcel has been received within the receptacle and further identifying from whom the parcels or parcels have been delivered.

8. A parcel delivery system employing a delivery receptacle having a plurality of walls, a bottom and a lid forming an interior of sufficient size to receive a variety of parcels, said delivery receptacle being fixedly attached to a ground surface, an electrical power source for opening the lid and fulfilling other electrical requirements of the receptacle, a remotely activated lid opening, closing and locking apparatus within the delivery receptacle, said apparatus having at least one lifting and a software application running on smart devices of a delivery company and the consumer, to activate opening and closing of the lid and notifying a consumer when a parcel has been delivered said system comprising:

remotely activating and opening via smart device a lid on the delivery receptacle;

placement of the parcel in the receptacle;

closing and locking via smart device the lid to secure a parcel or parcels within the delivery receptacle; and

sending via a software application a delivery signal to the consumer that a parcel has been received within the receptacle and further identifying from whom the parcels or parcels have been delivered.

9. The parcel delivery system of claim **8** wherein the electrical power source is a solar-powered battery charged by a solar panel on an exterior of the receptacle.

10. The parcel delivery system of claim **8** further comprising a light in an interior of the receptacle which is activated when the lid is opened.

11. The parcel delivery system of claim **8** further comprising light reflective material on an edge of the lid.

12. The parcel delivery system of claim **8** wherein the receptacle is fixedly secured to a ground surface by augur-type screws in the bottom.

13. The parcel delivery system of claim **8** further comprising cushioning material on the interior to prevent damage to parcels placed in the receptacle.

14. A method for delivering parcels at a consumer's residence or place of business employing a delivery receptacle located at a consumer's residence or place of business to receive parcels, said delivery receptacle being fixedly secured to a ground surface and having four walls, a bottom and a lid with cushioning material on the bottom and four walls forming an interior and an electrical power source, said method comprising:

a delivery vehicle driver scans a barcode on a parcel to be delivered which in turn sends a signal via smart device like a mobile phone to the delivery receptacle at a delivery location;

then the delivery vehicle receives a sounding signal back from the delivery receptacle acknowledging receipt of the signal and provides a honing sound which increases in intensity the closer the delivery gets to the delivery receptacle;

the delivery vehicles parks as close as possible to the delivery receptacle located and sends a signal to the receptacle to open the lid;

the driver puts the parcel into the open receptacle, preferably by tossing the parcel if close enough to the receptacle; and

the driver signals the receptacle to close the lid at **19** which also activates via a software application to advise the consumer of delivery details.

15. The parcel delivery method of claim **14** wherein the electrical power source is a solar-powered battery charged by a solar panel on an exterior of the receptacle.

16. The parcel delivery method of claim **14** further comprising a light in the interior of the receptacle which is activated when the lid is opened.

17. The parcel delivery method of claim **14** further comprising light reflective material on an edge of the lid of the receptacle.

18. The parcel delivery method of claim **14** wherein the receptacle is fixedly secured to a ground surface by augur-type screws in the bottom.

19. The parcel delivery method of claim **14** wherein the receptacle further comprises cushioning material on the interior to prevent damage to parcels placed in the receptacle.

20. The parcel delivery system of claim **8** further comprising a honing sound responsive to a signal activated by a delivery driver to assist a delivery vehicle driver in locating a receptacle, said honing signal capable of increasing magnitude as a delivery vehicle becomes closer to the receptacle.

* * * * *