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(54) **MOBILE DEVICE NFC-BASED DETECTION AND MERCHANT PAYMENT SYSTEM**

(71) Applicant: **PAYPAL, INC.**, San Jose, CA (US)

(72) Inventor: **Nadav Naaman**, Palo Alto, CA (US)

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(52) **U.S. Cl.**

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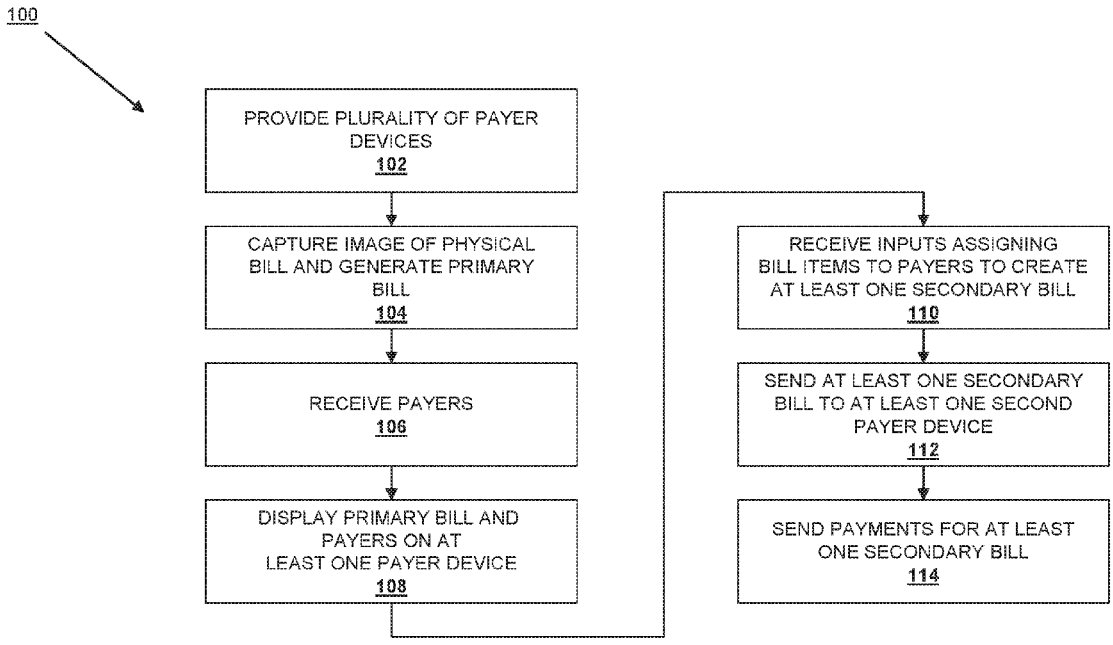
(57) **ABSTRACT**

An embodiment of a method for splitting a bill includes displaying a primary bill that includes a plurality of items on a first payer device. A plurality of inputs are received from the first payer device that assign the plurality of items to a first payer and at least one second payer to generate a first secondary bill and at least one second secondary bill. Each at least one second secondary bill is then sent to a respective second payer device, and payments are sent for the first secondary bill from the first payer device and each at least one secondary bill from the respective second payer device. An image of a physical bill may be taken by the first payer device and optical character recognition may be performed on the image to produce the primary bill that is displayed on the display of a first payer device.



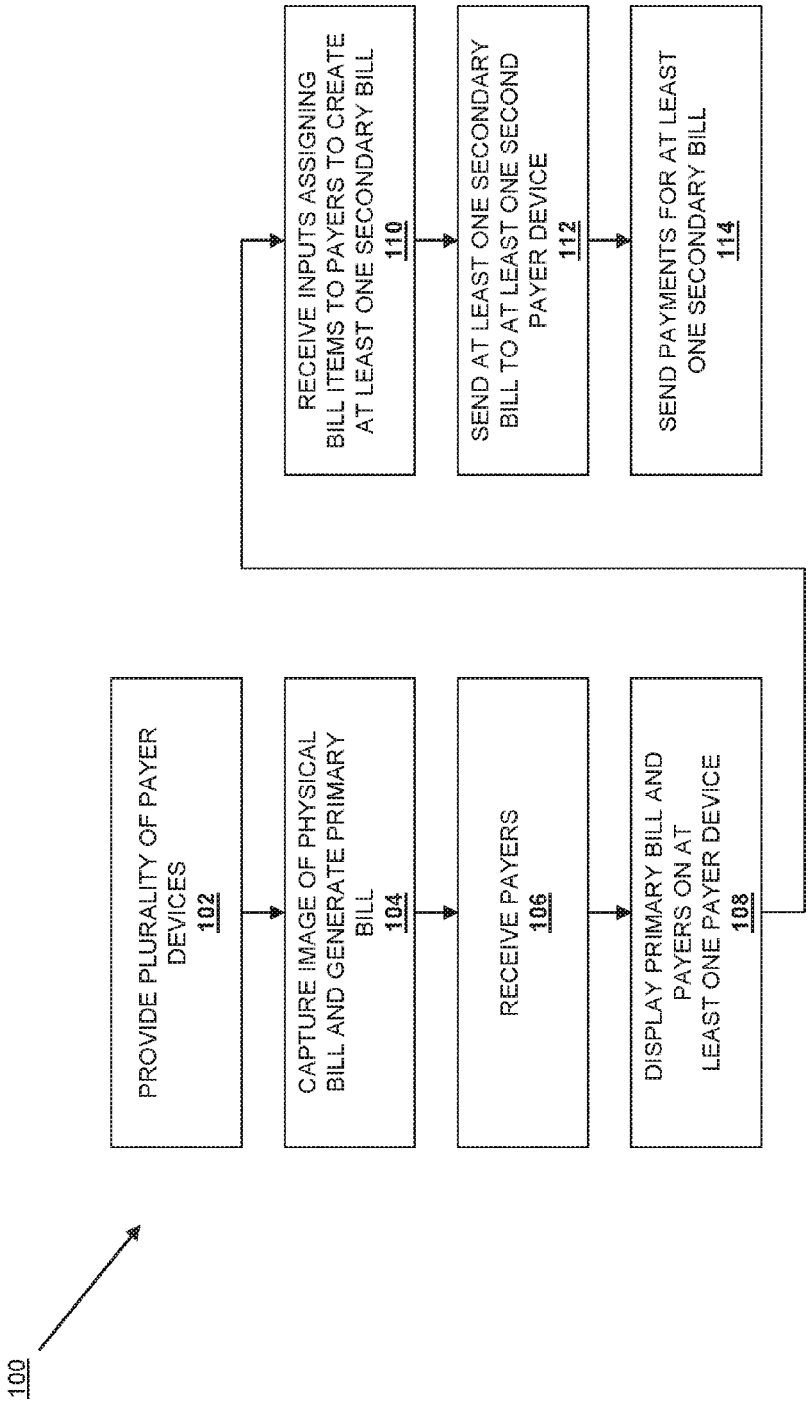

100
PROVIDE PLURALITY OF PAYER DEVICES 102
CAPTURE IMAGE OF PHYSICAL BILL AND GENERATE PRIMARY BILL 104
RECEIVE PAYERS 106
DISPLAY PRIMARY BILL AND PAYERS ON AT LEAST ONE PAYER DEVICE 108
RECEIVE INPUTS ASSIGNING BILL ITEMS TO PAYERS TO CREATE AT LEAST ONE SECONDARY BILL 110
SEND AT LEAST ONE SECONDARY BILL TO AT LEAST ONE SECOND PAYER DEVICE 112
SEND PAYMENTS FOR AT LEAST ONE SECONDARY BILL 114

FIGURE 1a

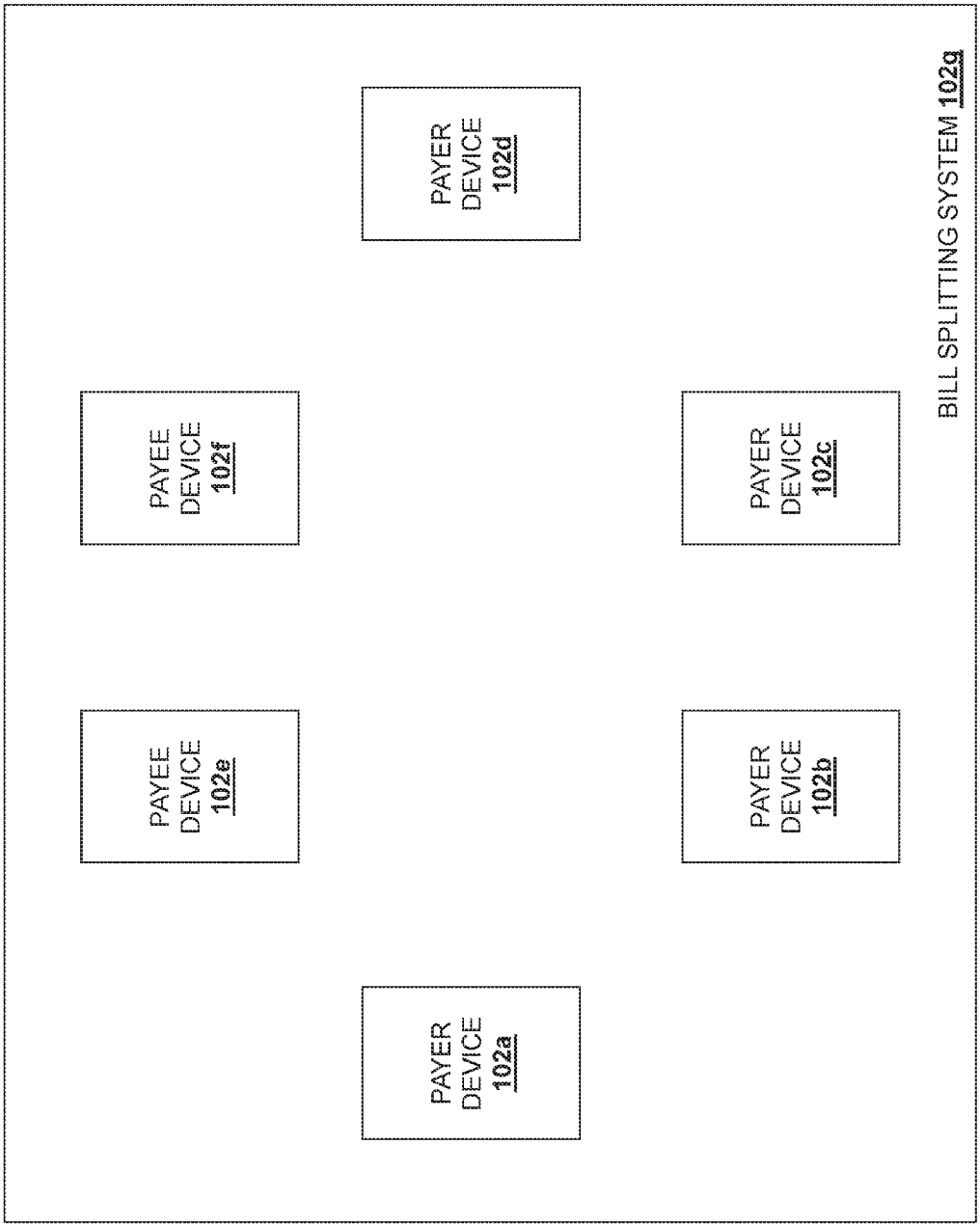

BILL SPLITTING SYSTEM 102g
PAYER DEVICE 102a
PAYER DEVICE 102b
PAYER DEVICE 102c
PAYER DEVICE 102d
PAYEE DEVICE 102e
PAYEE DEVICE 102f

FIGURE 1b

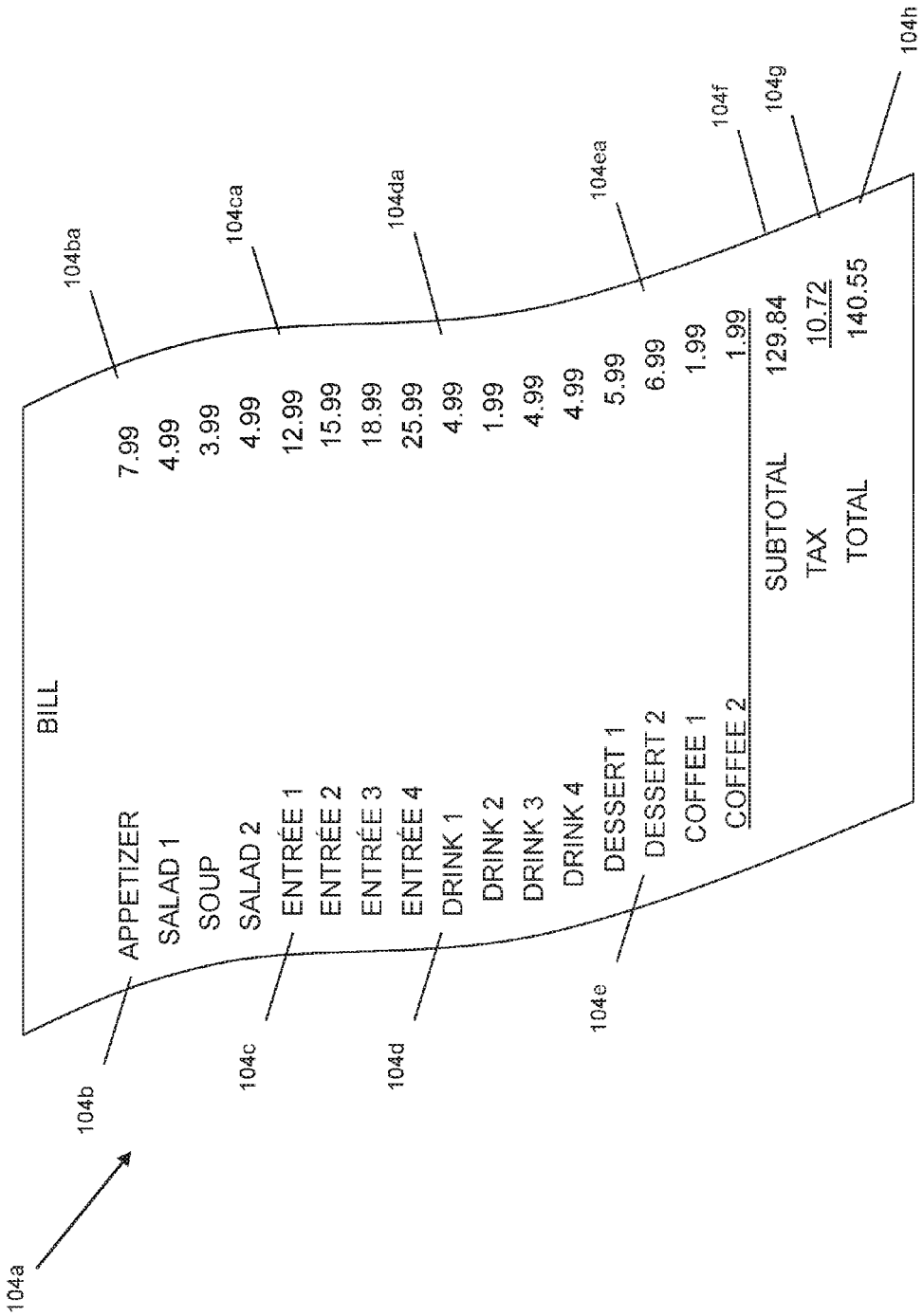

104a
104b
104c
104d
104e
104ba
104ca
104da
104ea
104f
104g
104h
BILL
APPETIZER 7.99
SALAD 1 4.99
SOUP 3.99
SALAD 2 4.99
ENTRÉE 1 12.99
ENTRÉE 2 15.99
ENTRÉE 3 18.99
ENTRÉE 4 25.99
DRINK 1 4.99
DRINK 2 1.99
DRINK 3 4.99
DRINK 4 4.99
DESSERT 1 5.99
DESSERT 2 6.99
COFFEE 1 1.99
COFFEE 2 1.99
SUBTOTAL 129.84
TAX 10.72
TOTAL 140.55

FIGURE 1c

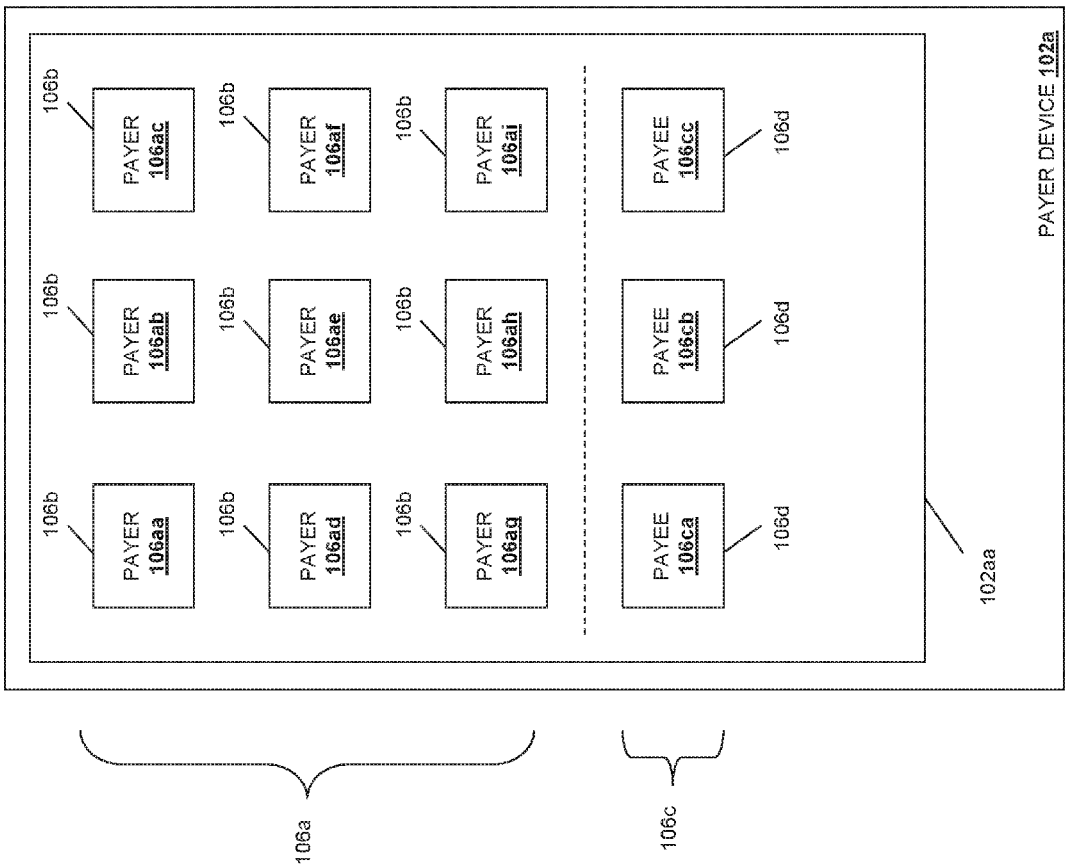

PAYER DEVICE 102a
102aa
PAYER 106aa
PAYER 106ab
PAYER 106ac
PAYER 106ad
PAYER 106ae
PAYER 106af
PAYER 106ag
PAYER 106ah
PAYER 106ai
PAYEE 106ca
PAYEE 106cb
PAYEE 106cc
106a
106b
106c
106d

FIGURE 1d

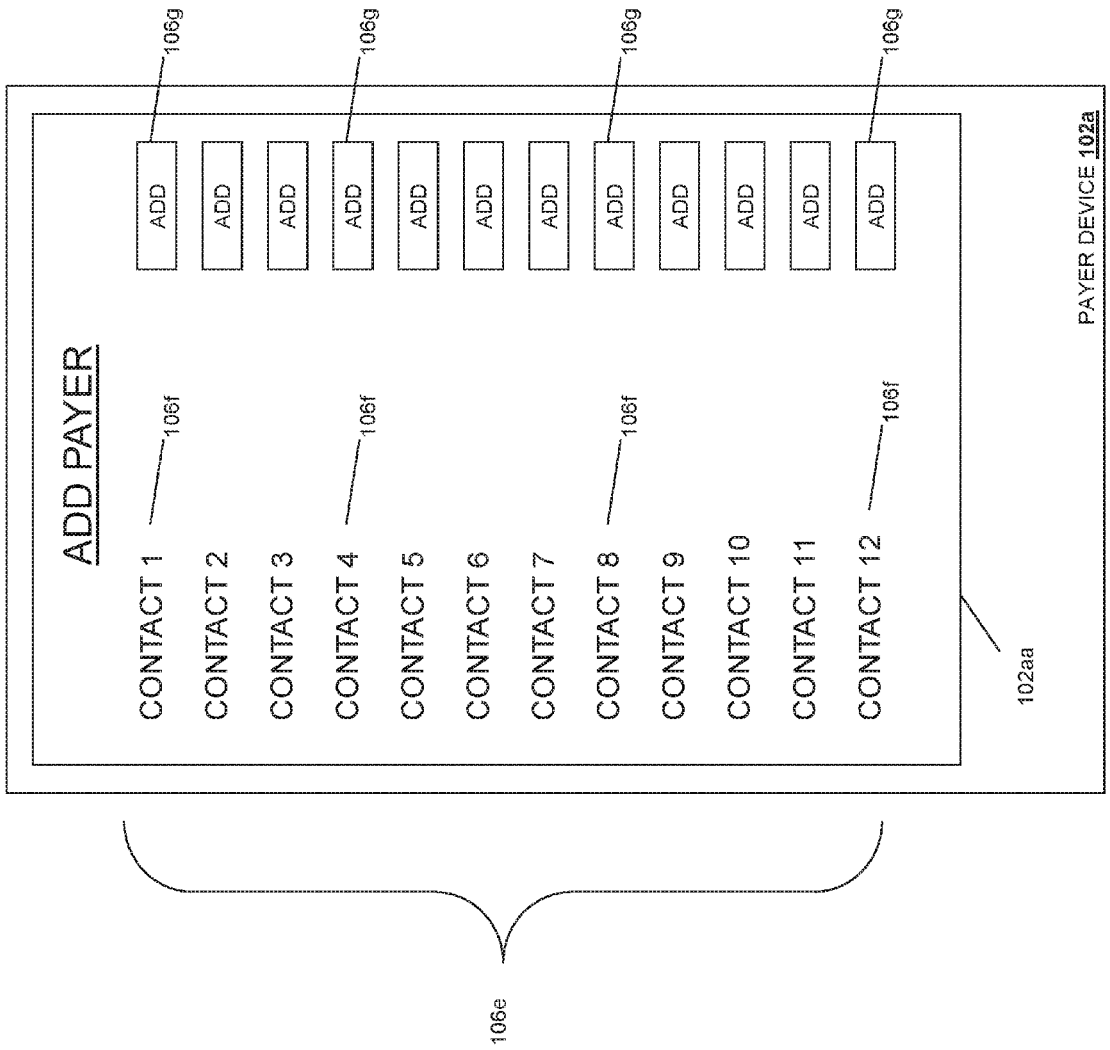

PAYER DEVICE 102a
ADD PAYER
CONTACT 1
CONTACT 2
CONTACT 3
CONTACT 4
CONTACT 5
CONTACT 6
CONTACT 7
CONTACT 8
CONTACT 9
CONTACT 10
CONTACT 11
CONTACT 12
ADD
106f
106g
102aa
106e

FIGURE 1e

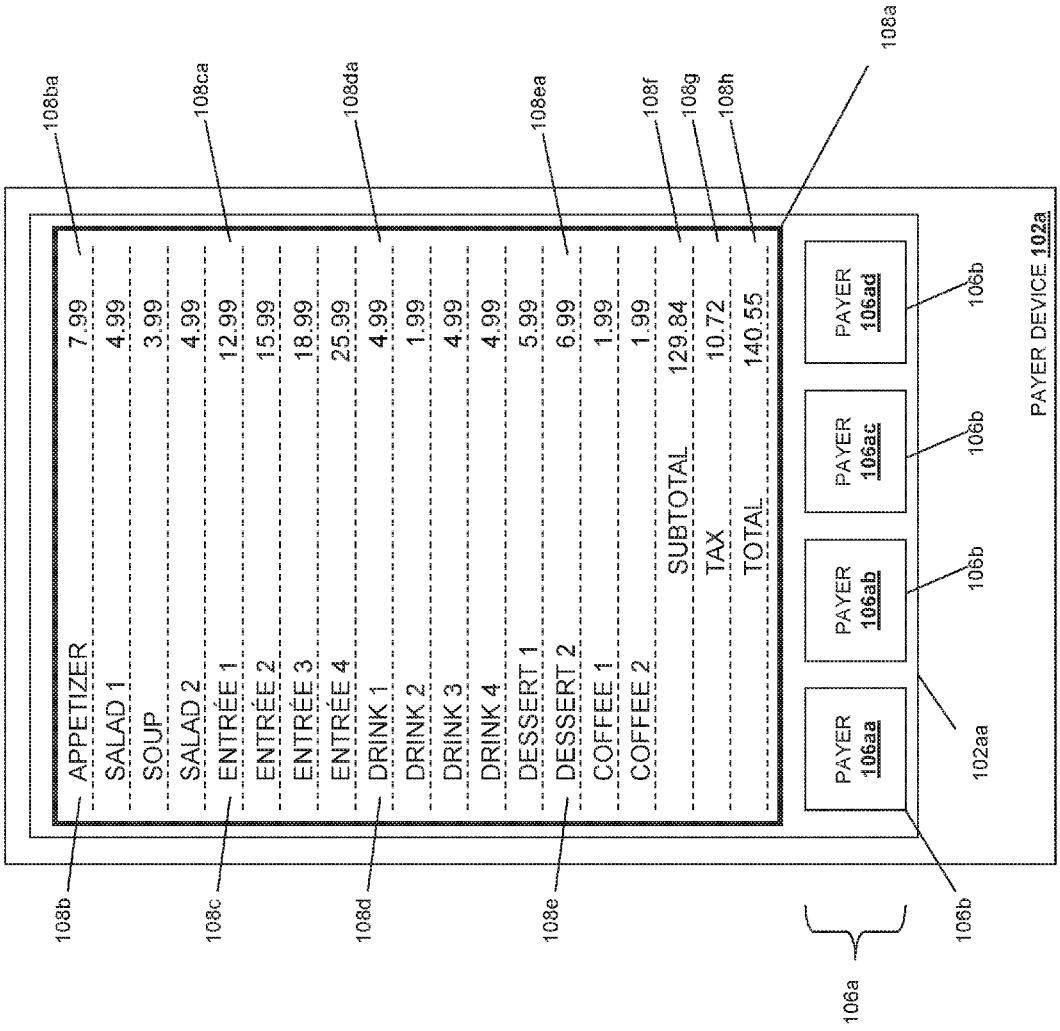

APPETIZER 7.99
SALAD 1 4.99
SOUP 3.99
SALAD 2 4.99
ENTRÉE 1 12.99
ENTRÉE 2 15.99
ENTRÉE 3 18.99
ENTRÉE 4 25.99
DRINK 1 4.99
DRINK 2 1.99
DRINK 3 4.99
DRINK 4 4.99
DESSERT 1 5.99
DESSERT 2 6.99
COFFEE 1 1.99
COFFEE 2 1.99
SUBTOTAL 129.84
TAX 10.72
TOTAL 140.55
PAYER 106aa
PAYER 106ab
PAYER 106ac
PAYER 106ad
PAYER DEVICE 102a
102aa
106a
106b
108a
108b
108c
108d
108e
108ba
108ca
108da
108ea
108f
108g
108h

FIGURE 1f

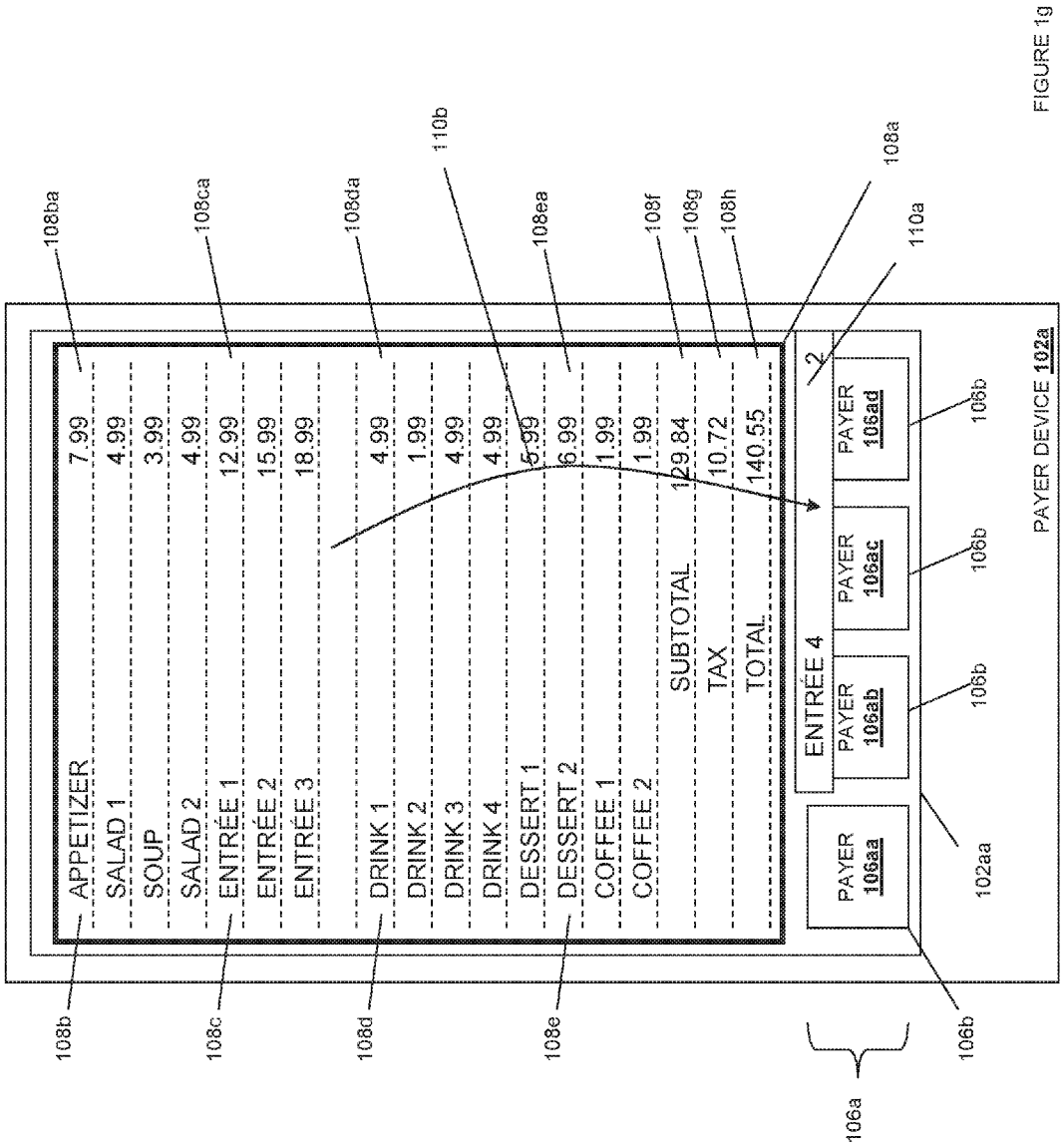

PAYER DEVICE 102a
APPETIZER 7.99
SALAD 1 4.99
SOUP 3.99
SALAD 2 4.99
ENTRÉE 1 12.99
ENTRÉE 2 15.99
ENTRÉE 3 18.99
DRINK 1 4.99
DRINK 2 1.99
DRINK 3 4.99
DRINK 4 4.99
DESSERT 1 5.99
DESSERT 2 6.99
COFFEE 1 1.99
COFFEE 2 1.99
SUBTOTAL 29.84
TAX 10.72
TOTAL 140.55
2
ENTRÉE 4
PAYER 105aa
PAYER 105ab
PAYER 105ac
PAYER 105ad
102aa
106a
106b
108b
108c
108d
108e
108ba
108ca
108da
108ea
108f
108g
108h
110a
110b
108a

FIGURE 1g

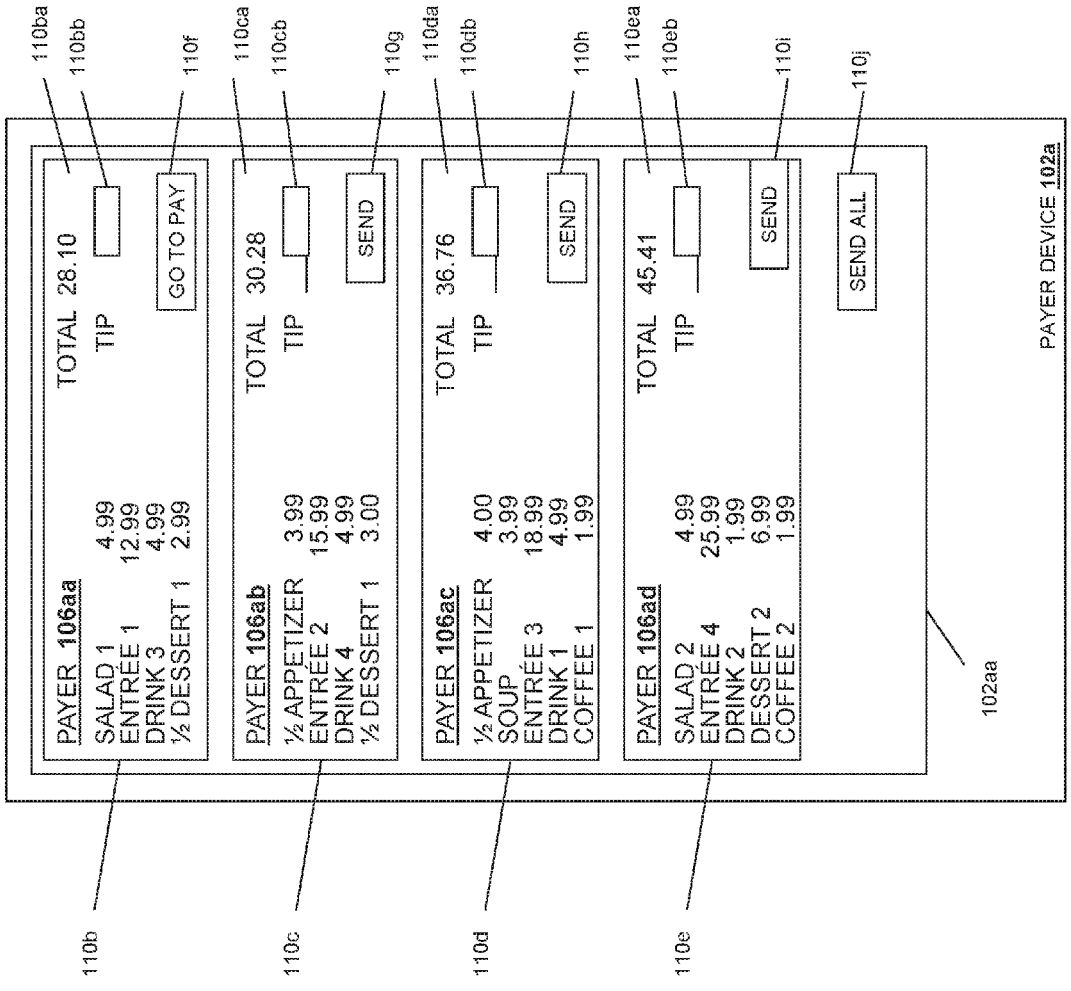

PAYER DEVICE 102a
PAYER 106aa
SALAD 1 4.99
ENTRÉE 1 12.99
DRINK 3 4.99
½ DESSERT 1 2.99
TOTAL 28.10
TIP
GO TO PAY
PAYER 106ab
½ APPETIZER 3.99
ENTRÉE 2 15.99
DRINK 4 4.99
½ DESSERT 1 3.00
TOTAL 30.28
TIP
SEND
PAYER 106ac
½ APPETIZER 4.00
SOUP 3.99
ENTRÉE 3 18.99
DRINK 1 4.99
COFFEE 1 1.99
TOTAL 36.76
TIP
SEND
PAYER 106ad
SALAD 2 4.99
ENTRÉE 4 25.99
DRINK 2 1.99
DESSERT 2 6.99
COFFEE 2 1.99
TOTAL 45.41
TIP
SEND
SEND ALL
110ba
110bb
110f
110ca
110cb
110g
110da
110db
110h
110ea
110eb
110i
110j
102aa
110b
110c
110d
110e

FIGURE 1h

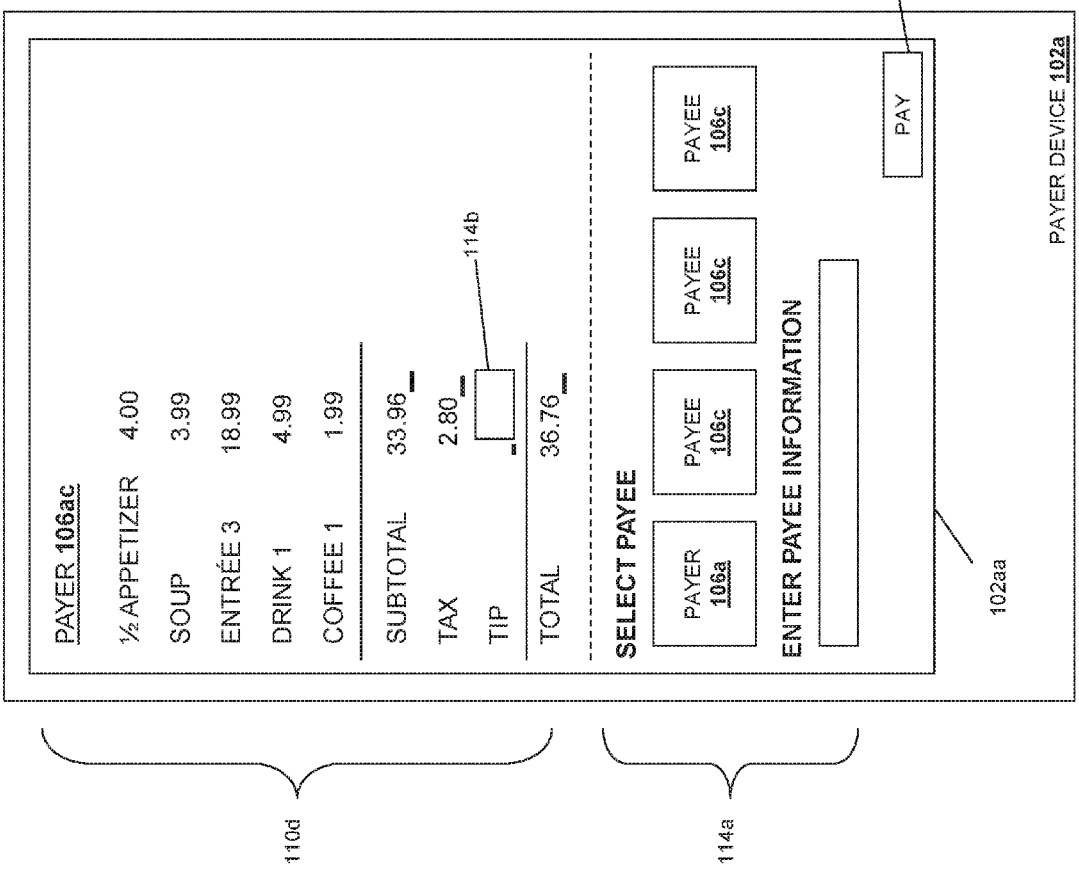
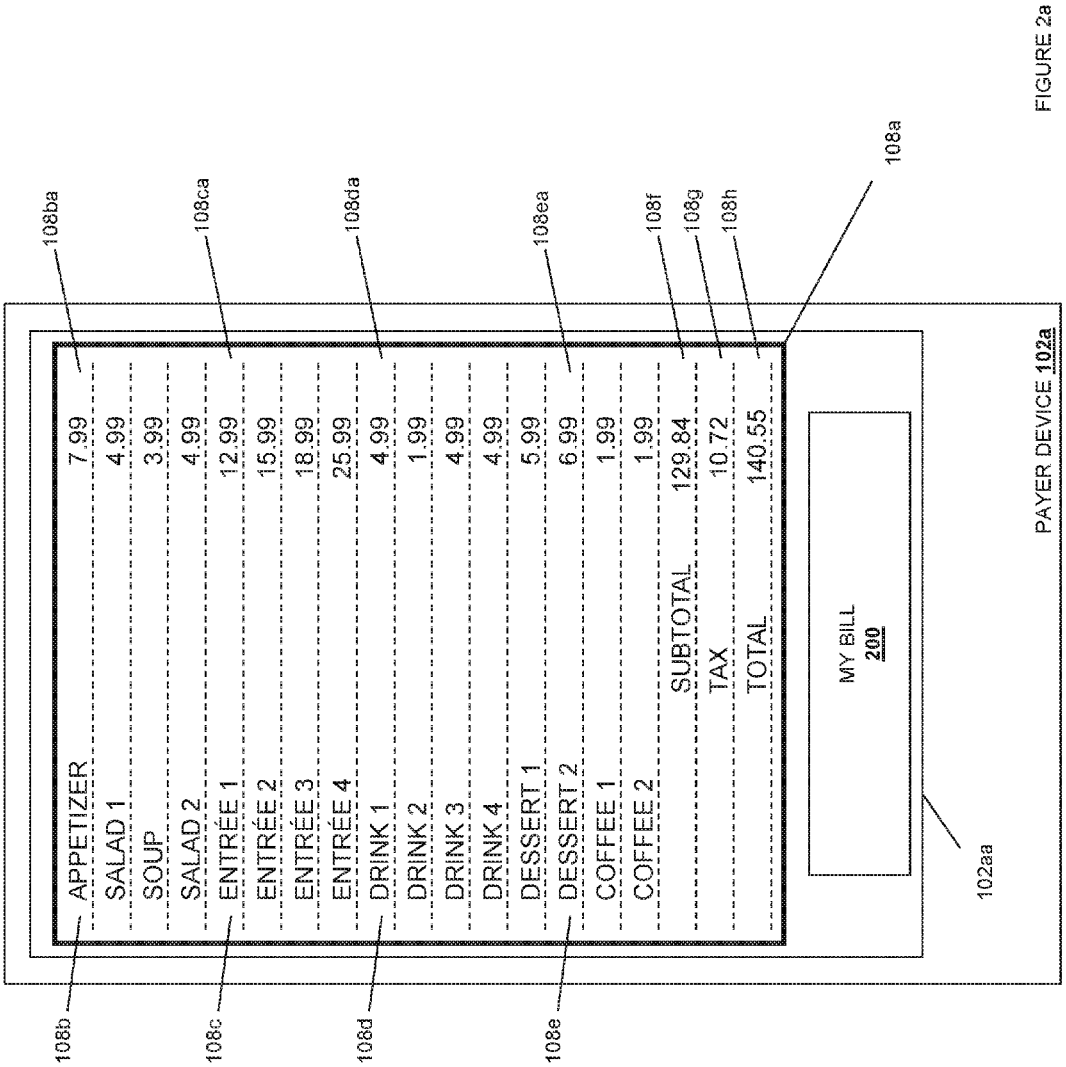

PAYER 106ac
½ APPETIZER 4.00
SOUP 3.99
ENTRÉE 3 18.99
DRINK 1 4.99
COFFEE 1 1.99
SUBTOTAL 33.96
TAX 2.80
TIP
TOTAL 36.76
114b
SELECT PAYEE
PAYER 106a
PAYEE 106c
PAYEE 106c
PAYEE 106c
ENTER PAYEE INFORMATION
PAY
114c
102aa
PAYER DEVICE 102a
110d
114a

FIGURE 1i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SOUP 3.99
SALAD 2 4.99
ENTRÉE 1 12.99
ENTRÉE 2 15.99
ENTRÉE 3 18.99
ENTRÉE 4 25.99
DRINK 1 4.99
DRINK 2 1.99
DRINK 3 4.99
DRINK 4 4.99
DESSERT 1 5.99
DESSERT 2 6.99
COFFEE 1 1.99
COFFEE 2 1.99
SUBTOTAL 129.84
TAX 10.72
TOTAL 140.55
MY BILL
200
PAYER DEVICE 102a
102aa
108a
108ba
108b
108ca
108c
108da
108d
108ea
108e
108f
108g
108h

FIGURE 2a

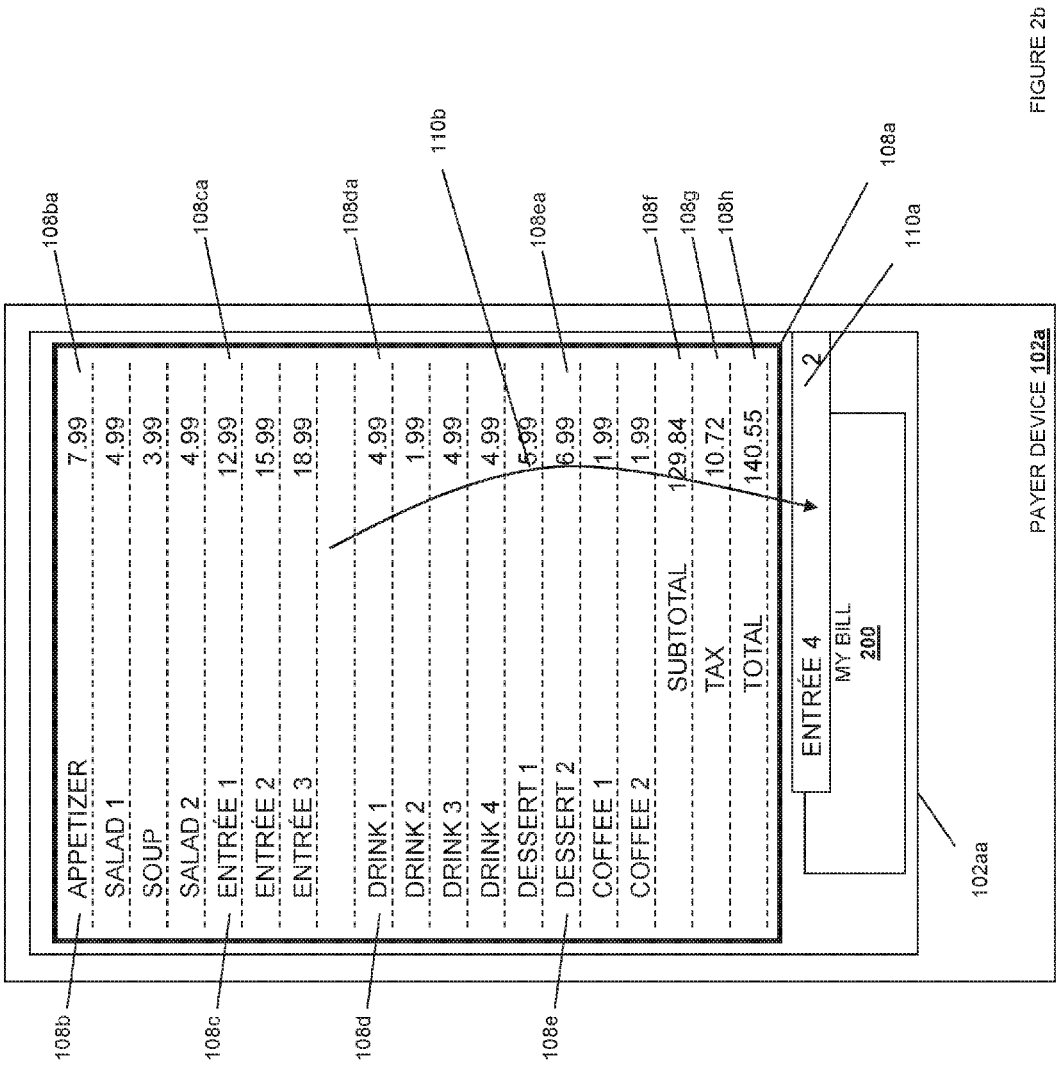
APPETIZER 7.99
SALAD 1 4.99
SOUP 3.99
SALAD 2 4.99
ENTRÉE 1 12.99
ENTRÉE 2 15.99
ENTRÉE 3 18.99
DRINK 1 4.99
DRINK 2 1.99
DRINK 3 4.99
DRINK 4 4.99
DESSERT 1 5.99
DESSERT 2 6.99
COFFEE 1 1.99
COFFEE 2 1.99
SUBTOTAL 129.84
TAX 10.72
TOTAL 140.55
ENTRÉE 4
MY BILL
200
2
PAYER DEVICE 102a
102aa
108ba
108b
108ca
108c
108da
108d
110b
108ea
108e
108f
108g
108h
108a
110a

FIGURE 2b

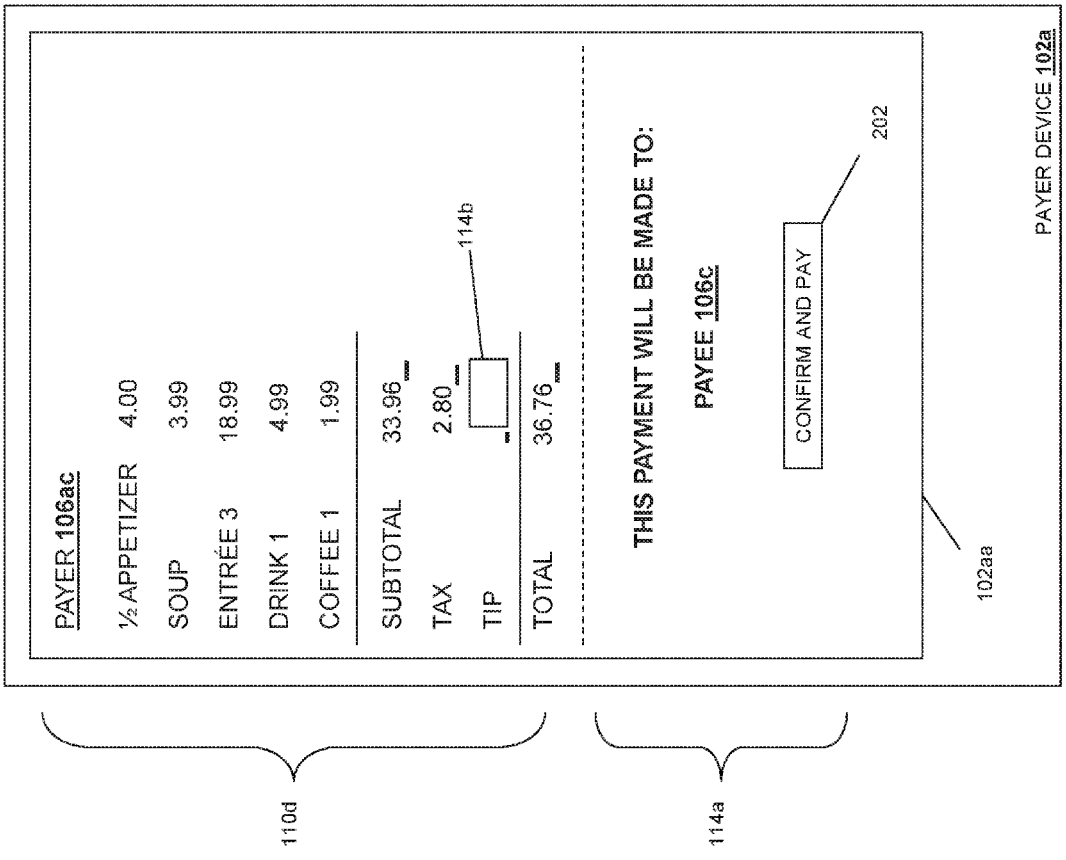
PAYER 106ac
½ APPETIZER 4.00
SOUP 3.99
ENTRÉE 3 18.99
DRINK 1 4.99
COFFEE 1 1.99
SUBTOTAL 33.96
TAX 2.80
TIP
TOTAL 36.76
114b
THIS PAYMENT WILL BE MADE TO:
PAYEE 106c
CONFIRM AND PAY
202
102aa
PAYER DEVICE 102a
110d
114a

FIGURE 2c

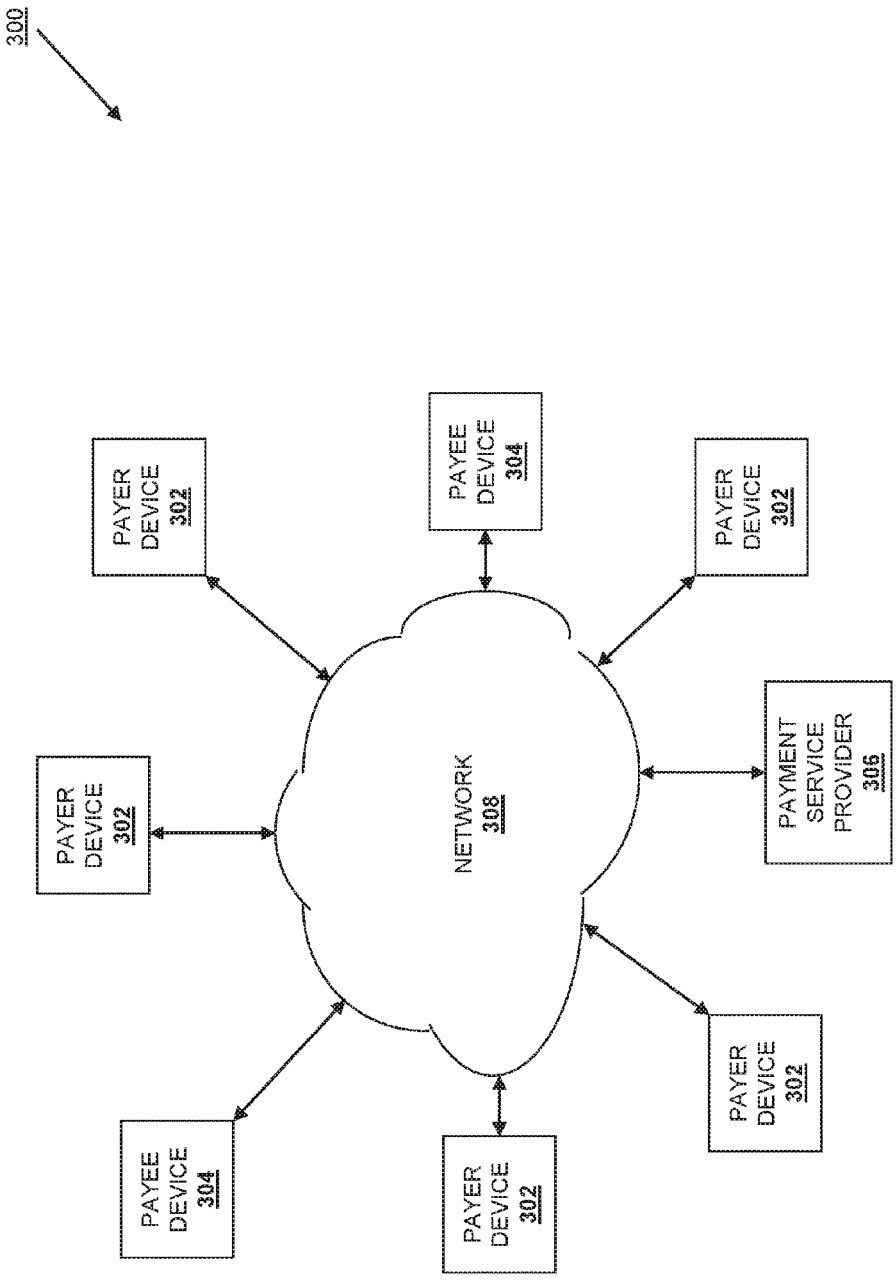
300
PAYER DEVICE 302
PAYEE DEVICE 304
PAYER DEVICE 302
PAYER DEVICE 302
NETWORK 308
PAYMENT SERVICE PROVIDER 306
PAYER DEVICE 302
PAYEE DEVICE 304
PAYER DEVICE 302
PAYER DEVICE 302

FIGURE 3

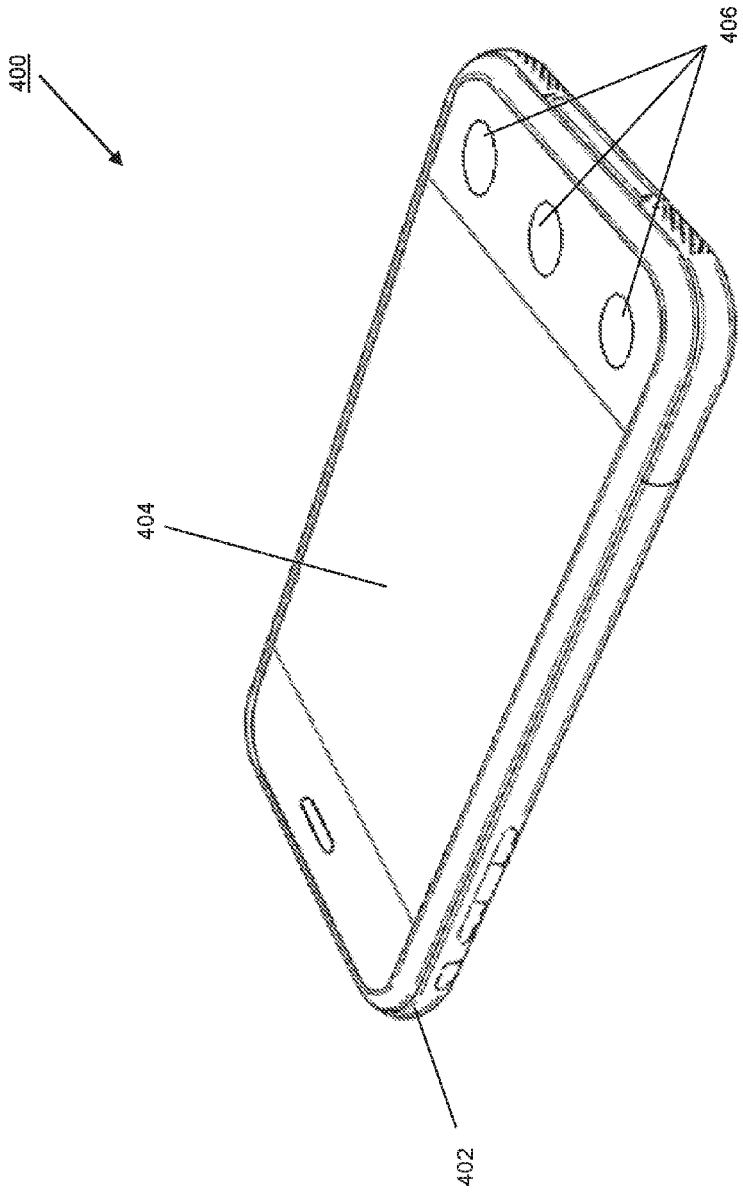

FIGURE 4

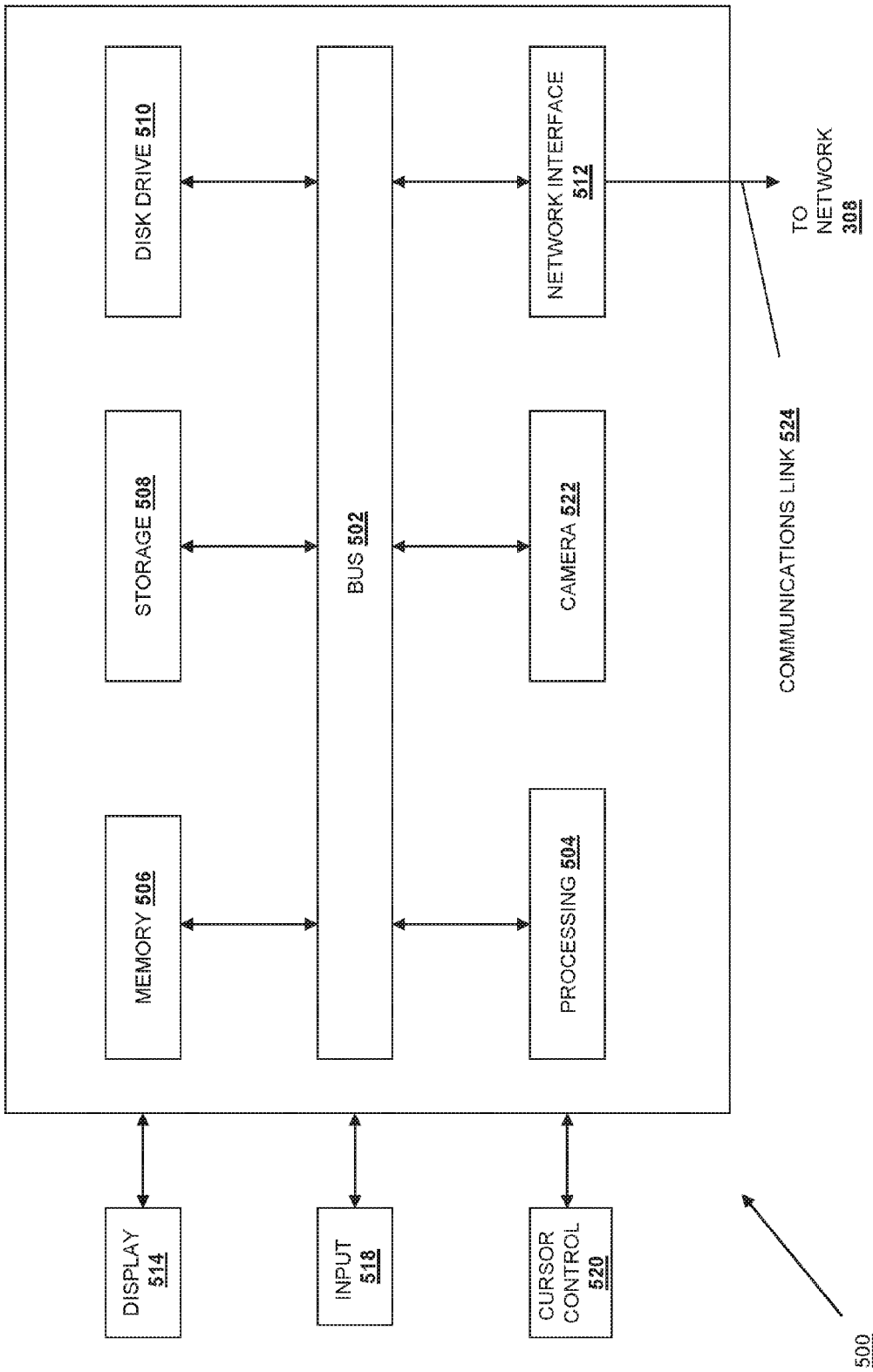
DISK DRIVE 510
STORAGE 508
MEMORY 506
BUS 502
NETWORK INTERFACE 512
CAMERA 522
PROCESSING 504
TO NETWORK 308
COMMUNICATIONS LINK 524
DISPLAY 514
INPUT 518
CURSOR CONTROL 520
500

FIGURE 5

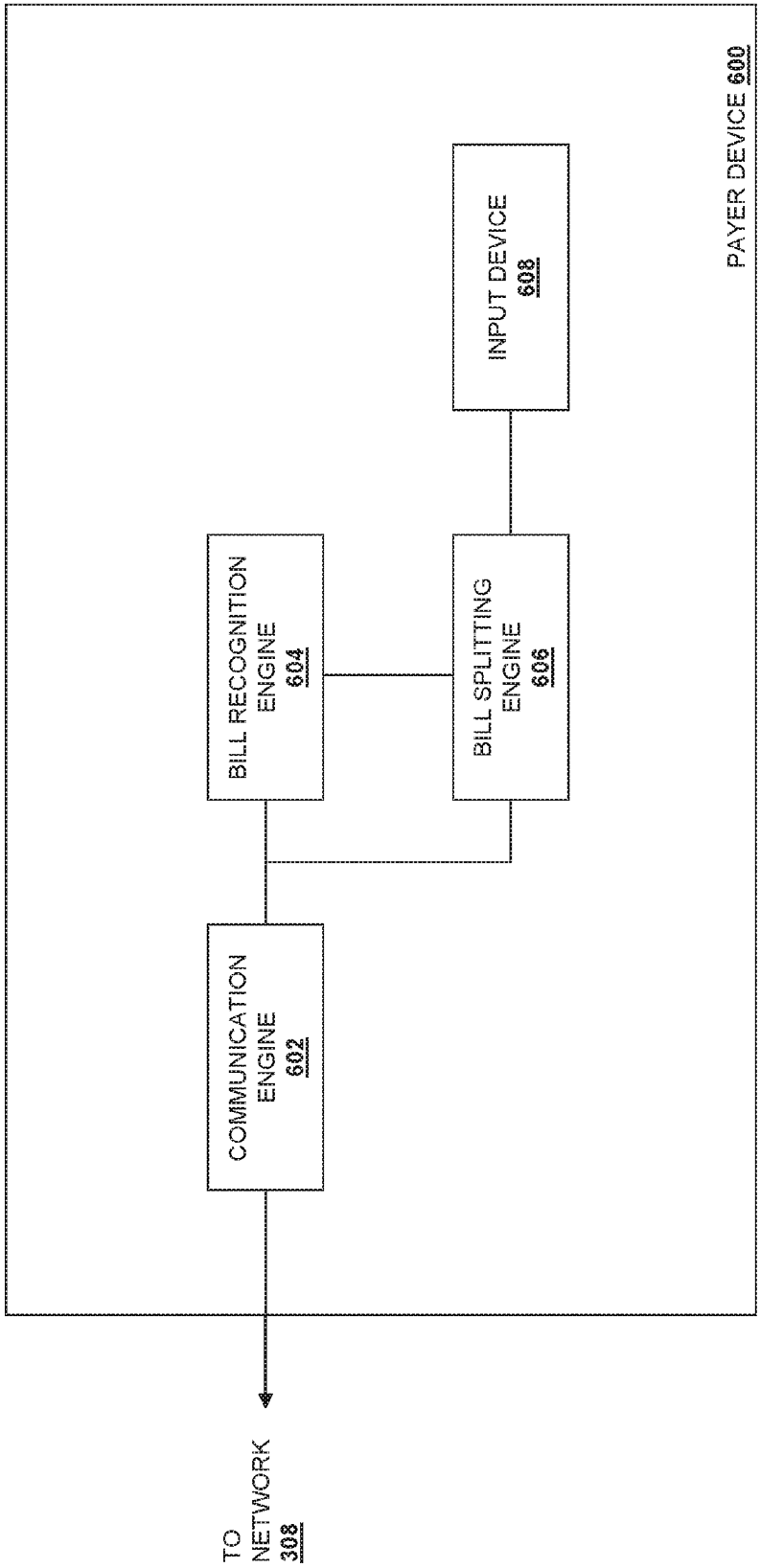
PAYER DEVICE 600
INPUT DEVICE 608
BILL RECOGNITION ENGINE 604
BILL SPLITTING ENGINE 606
COMMUNICATION ENGINE 602
TO NETWORK 308

FIGURE 6

MOBILE DEVICE NFC-BASED DETECTION AND MERCHANT PAYMENT SYSTEM

CROSS-REFERENCE TO REPLATED APPLICATIONS

[0001] This is a Continuation Application to U.S. Utility application Ser. No. 12/976,404, filed Dec. 22, 2010, entitled "Bill Splitting System," Attorney Docket Number 70481.262, the disclosure of which is incorporated herein by reference in its entirety.

BACKGROUND

[0002] 1. Field of the Invention

[0003] The present invention generally relates to mobile payments and more particularly to a bill splitting system for use in making mobile payments.

[0004] 2. Related Art

[0005] More and more consumers are purchasing items and services over electronic networks such as, for example, the Internet. Consumers routinely purchase products and services from merchants and individuals alike. The transactions may take place directly between an on-line merchant or retailer and the consumer, and payment is typically made by entering credit card or other financial information. Transactions may also take place with the aid of an on-line or mobile payment provider such as, for example, PayPal, Inc. of San Jose, Calif. Such payment providers can make transactions easier and safer for the parties involved. Purchasing with the assistance of an on-line or mobile payment provider from the convenience of virtually anywhere using a mobile device is one main reason why on-line/mobile purchases are growing very quickly.

[0006] Typically, mobile payments are conducted between one payer and one payee and involve the payer receiving a bill or invoice from the payee and then providing full payment for the bill or invoice over an electronic network. However, in some situations, a bill or invoice may need to be 'split' or divided up into a plurality of bills. For example, a plurality of customers (payers) may order items together at a restaurant (payee), and those orders may be recorded for the plurality of customers as a group and presented in a single bill to the plurality of customers. The payment of such a bill with the assistance of a mobile payment provider raises a number of issues.

[0007] Conventionally, mobile payment for a bill that includes items to be paid for by a plurality of customers is accomplished by one of the customers entering the number of customers and a total amount due on the bill into a payer device. The payer device divides the total amount due by the number of customers to generate an equal amount due for each customer, and then sends a payment request to each customer. The customer using the payer device pays the total amount due on the bill with the assistance of the mobile payment provider, and then must wait to get reimbursed by each of the customers according to the payment requests sent using the payer device. Furthermore, each customer ends up paying an equal portion of the total amount due on the bill even through different customers have most likely purchased different items having different prices. Thus, the 'even split' of the total amount due on the bill that is determined by the payer device may cause some customers to pay for a larger portion of the bill than they should and some customer to pay for a smaller portion of the bill than they should.

[0008] Thus, there is a need for an improved bill splitting system for use in making mobile payments.

SUMMARY

[0009] According to one embodiment, a method for splitting a bill includes displaying a primary bill on a display of at least one payer device, wherein the primary bill includes a plurality of items, receiving a plurality of inputs from an input device on the at least one payer device, wherein the plurality of inputs assign the plurality of items to a first payer and at least one second payer to generate a first secondary bill and at least one second secondary bill, and sending a payment for the first secondary bill from the at least one payer device over a network.

[0010] In an embodiment, the primary bill displayed on the first payer device is produced by performing optical character recognition on an image of a physical bill. In another embodiment the primary bill is an electronic bill sent over a network to at least one payer device.

[0011] As a result, a bill having a plurality of payers may be quickly and easily split between the payers based on the items purchased by each payer to produce a plurality of secondary bills, and each of those secondary bills may be paid with the assistance of a mobile payment provider.

[0012] These and other features and advantages of the present disclosure will be more readily apparent from the detailed description of the embodiments set forth below taken in conjunction with the accompanying figures.

BRIEF DESCRIPTION OF THE FIGURES

[0013] FIG. **1***a* is a flow chart illustrating an embodiment of a method for splitting a bill;

[0014] FIG. **1***b* is a schematic view illustrating an embodiment of a bill splitting system;

[0015] FIG. **1***c* is a front view illustrating an embodiment of a physical bill;

[0016] FIG. **1***d*; is a schematic view illustrating an embodiment of a payer device being used to select payers and/or payees;

[0017] FIG. **1***e* is a schematic view illustrating an embodiment of a payer device being used to select payers;

[0018] FIG. **1***f* is a schematic view illustrating an embodiment of a payer device being used to display a primary bill and a plurality of payers;

[0019] FIG. **1***g* is a schematic view illustrating an embodiment of a payer device being used to assign an item in a primary bill to a payer;

[0020] FIG. **1***h* is a schematic view illustrating an embodiment of a payer device being used to display a plurality of secondary bills;

[0021] FIG. **1***i* is a schematic view illustrating an embodiment of a payer device being used to display and pay a secondary bill;

[0022] FIG. **2***a* is a schematic view illustrating an embodiment of a payer device being used to display a primary bill;

[0023] FIG. **2***b* is a schematic view illustrating an embodiment of a payer device being used to assign an item in a primary bill to a payer;

[0024] FIG. **2***c* is a schematic view illustrating an embodiment of a payer device being used to display and pay a secondary bill;

[0025] FIG. **3** is a schematic view illustrating an embodiment of a networked system used in a bill splitting system;

[0026] FIG. **4** is a perspective view illustrating an embodiment of a payer device;

[0027] FIG. **5** is a schematic view illustrating an embodiment of a payer device; and

[0028] FIG. **6** is a schematic view illustrating an embodiment of a payer device.

[0029] Embodiments of the present disclosure and their advantages are best understood by referring to the detailed description that follows. It should be appreciated that like reference numerals are used to identify like elements illustrated in one or more of the figures, wherein showings therein are for purposes of illustrating embodiments of the present disclosure and not for purposes of limiting the same.

DETAILED DESCRIPTION

[0030] The present disclosure provides a system and method for splitting a bill and paying for at least a portion of that bill with the assistance of a mobile payment provider. An assignable digital primary bill for a plurality of payers is provided on at least one payment device, and each of the items on that primary bill are assigned to one of a plurality of payers to produce a plurality of secondary bills that each correspond to a respective payer. Those secondary bills may then be sent to payment devices associated with their respective payer to be paid with the assistance of a mobile payment provider. The present disclosure also discloses a system and method for splitting a bill by a payee by assigning each of the items on an assignable digital primary bill to one of a plurality of payers to produce a plurality of secondary bills that each correspond to a respective payer, and the payee then sending each of the secondary bills to payment device associated with their respective payer to be paid with the assistance of a mobile payment provider.

[0031] Referring now to FIGS. **1***a* and **1***b*, a method **100** for splitting a bill is illustrated. The method **100** begins at block **102** where a plurality of payer devices are provided. In an embodiment, a plurality of payers devices **102***a*, **102***b*, **102***c*, and **102***d* are provided. The payer devices **102***a*, **102***b*, **102***c*, and **102***d* may be coupled to each other and one or more payee devices **102***e* and **102***f* through a network to provide a bill splitting system **102***g*. In the method **100** discussed below, the bill splitting system **102***g* is described as being used to split a bill between a plurality of payees at a restaurant. However, one of skill in the art will recognize that the present disclosure is not so limited, and a variety of other situations that involve the splitting of a bill or invoice between a plurality of payees fall within its scope. In the current embodiment, each of a plurality of payers may have a payer device (e.g., one of the payer devices **102***a*, **102***b*, **102***c*, and **102***d*,) and may have ordered one or more items at a restaurant that has one or more payee devices (e.g., the payee devices **102***e* and **102***f*).

[0032] Referring now to FIGS. **1***a* and **1***c*, the method **100** then proceeds to block **104** where an image of a physical bill is captured. The plurality of payees at the restaurant may be presented with a physical bill **104***a* that includes a plurality of items, such as the items **104***b*, **104***c*, **104***d*, and **104***e*, that were ordered by the plurality of payees. Each item is associated on the physical bill **104***a* with a cost, such as the costs **104***ba*, **104***ca*, **104***da*, and **104***ea*. In additional, a subtotal **104***f*, which may be the sum of the costs of the items, is included on the physical bill **104***a*, along with a tax **104***g* associated with the subtotal **104***f* (e.g., 8.25% of the total in the illustrated embodiment) and a total **104***h* that may be the sum of the subtotal **104***f* and the tax **104***g*. While a particular physical bill has been described and illustrated, one of skill in the art will recognize that a variety of physical bills and/or invoices may replace the physical bill **104***a* without departing from the scope of the present disclosure. One or more of the payer devices **102***a*, **102***b*, **102***c*, and **102***d* may then capture an image of the physical bill **104***a* using, for example, a camera on the payer device to take an image of the physical bill as is known in the art. The payer device(s) that captured the image of the physical bill **104***a* may then use optical character recognition techniques to generate a primary bill that is an assignable digital representation of the physical bill **104***a*, discussed in further detail below. In an embodiment, a first payer device (e.g., the payer device **102***a*) may capture the image of the physical bill **104***a* and generate the primary bill. In another embodiment, a plurality of payer devices (e.g., the payer devices **102***a* and **102***b*, **102***c*, and/or **102***d*) may capture the image of the physical bill **104***a* and generate the primary bill.

[0033] Referring now to FIG. **1***a*, and **1***d*, the method **100** then proceeds to block **106** where a plurality of payers are received. The payer device(s) that generated the primary bill in block **104** of the method **100** may determine that one or more payers **106***a* (e.g., payers **106***aa*, **106***ab*, **106***ac*, **106***ad*, **106***ae*, **106***af*, **106***ag*, **106***ah*, and **106***ai*) are present in the bill splitting system **102***g* and display each of those payers **106***a* as payer icons **106***b* on the payer device(s) (e.g., on a display **102***aa* of a payer device **102***a*). In an embodiment, the determination that one or more of the payers **106***a* are present may be accomplished over a Bump™-type network by 'bumping' or physically engaging the payer device(s) that generated the primary bill and the payer devices of the one or more payers **106***a* to exchange information, as described in co-pending U.S. application Ser. No. 10/570,454, attorney docket no. 70481.170, filed on Sep. 30, 2009, and co-pending U.S. application Ser. No. 12/570,544, attorney docket no. 70481.171, filed on Sep. 30, 2009, the disclosures of which are incorporated herein by reference. Also, a variety of other Near Field Communication (NFC) techniques may be used to determine the presence of payers **106***a* and/or payer devices to display the payer icons **106***b* illustrated in FIG. **1***d*. Furthermore, a variety of other communication techniques known in the art may be used to determine the presence of the payers **106***a* and/or payer devices in the bill splitting system **102***g*. Information exchanged between the payer devices may include payer information such as payer contact information and/or any other information needed to display the payer icons **106***b* and send a secondary bill to a particular payer **106***a* and/or payer device (discussed in further detail below). In an embodiment, the payer device(s) that generated the primary bill in block **104** of the method **100** may use similar techniques to determine that one or more payees **106***c* (e.g., payees **106***ca*, **106***cb*, and **106***cc*) are present in the bill splitting system **102***g* and display those payees **106***c* as payee icons **106***d* on the payer device(s).

[0034] Referring now to FIGS. **1***a*, **1***d*, and **1***e*, payers may also be received at block **106** of the method **100** by accessing a contact list **106***e* on the payment device(s) that generated

the primary bill in block **104** of the method **100** and selecting one or more contacts **106***f* stored on the payer device(s) to be added as payers (e.g., by selecting an "ADD" button **106***g* that is displayed adjacent the contact **106***f* on the display **102***aa* of the payer device **102***a*.) Information retrieved by the payer device(s) may include payer information such as payer contact information and/or any other information needed to display the payer icons **106***b* and send a secondary bill to a particular payer **106***a* and/or payer device (discussed in further detail below). The payer device(s) (e.g., the payer device **102***a* in FIG. **1***d*) may then be used to select the payers **106***a* that ordered one or more of the items that are on the physical bill **104***a* by, for example, selecting the payer icon **106***b* associated with that payer **106***a*. In an embodiment, by identifying the payers as discussed above, the payment system may use the connection used to identify those payers to complete any authentications and/or verifications needing to approve payments from the different payers. Furthermore, a payee **106***c* for whom payment on the physical bill is to be provided may be designated by selecting the payee icon **106***d* associated with that payee **106***c*.

[0035] Referring now to FIGS. **1***a* and **1***f*, the method **100** then proceeds to block **108** where the primary bill and payers are displayed on at least one payer device. In an embodiment, the payer device(s) that generated the primary bill in block **104** of the method **100** may display a primary bill **108***a* on that payer device (e.g., the display **102***aa* of the payer device **102***a* in FIG. **1***f*) along with the payer icons **106***b* associated with the payers **106***a* that were selected in block **106** of the method **100** (e.g., the payers **106***aa*, **106***ab*, **106***ac*, and **106***ad*). In an embodiment, a payer icon **106***b* for a payer associated with the payer device that generated the primary bill in block **104** of the method **100** may be displayed (e.g., the payer icon **106***b* for the payer **106***aa*). In an embodiment, the optical character recognition techniques performed on the physical bill **104***a* provide the primary bill **108***a* that is a digital representation of the physical bill **104***a* and includes a plurality of assignable items (e.g., the assignable items **108***b*, **108***c*, **108***d*, and **108***e*) with associated assignable costs (e.g., the assignable costs **108***ba*, **108***ca*, **108***da*, and **108***ea*) that correspond to the items and costs on the physical bill **104***a*. The primary bill **108***a* also includes a subtotal **108***f*, a tax **108***g*, and a total **108***h* that correspond to the subtotal **104***f*, the tax **104***g*, and the total **104***h* on the physical bill **104***a*. In an embodiment, elements of the primary bill **108***a* (e.g., the items, costs, subtotal, tax, and/or total) may be edited using the payer device(s) to, for example, correct any errors that may result in the use of optical character recognition techniques on the physical bill **104***a* to provide the primary bill **108***a*. In an embodiment, when a plurality of payer devices generate the primary bill **108***a* and select the payers **106***a*, those payer devices may sync with each other to crosscheck and/or ensure the information on the primary bill **108***a* (e.g., the assignable items, assignable costs, subtotal, the tax, and/or the total) and/or the payers **106***a* are correct on each of the payer devices. In an embodiment, a single payer device (e.g., the payer device **102***a*) may generate and send the primary bill **108***a* and the selected payer icons **106***b* to the other payer devices (e.g., the payer devices **102***b*, **102***c*, and/or **102***d*) that are associated with the payers (e.g., the payers **106***ab*, **106***ac*, and **106***ad*).

[0036] In an alternative embodiment, illustrated in FIG. **2***a*, block **104** of the method **100** may be skipped, and the primary bill **108***a* may be sent to the payer device(s) from a payee requesting payment. For example, a plurality of payers may order items, and those items may be included in an electronic primary bill **108***a* by the payee. The payee may then use a payee device (e.g., the payee device **102***e* or **1020** to select payers, for example, substantially as described above with reference to FIG. **1***d*, and send the primary bill to one or more of the payer devices associated with those payers. As can be seen in FIG. **2***a*, the payer device **102***a* may display the primary bill **108***a* on the display **102***aa*, and may also include a my-bill icon **200**. Each of the payer devices belonging to the payers responsible for the primary bill **108***a* may receive the primary bill **108***a* such that it is displayed along with the my-bill icon **200** on their payer device in substantially the same manner as is illustrated for payer device **102***a* in FIG. **2***a*.

[0037] Referring now to FIG. **1***a*, **1***f*, and **1***g*, the method **100** then proceeds to block **110** where a plurality of inputs are received that assign bill items to payers to create at least one secondary bill. In an embodiment, the display **102***aa* may be a touch input device that allows a payer to select one of the assignable item **110***a* (e.g., ENTRÉE 4 in the illustrated embodiment) by touching that assignable item **110***a*, dragging that item across the display (as indicted by arrow **110***b*,) and assigning that assignable item **110***a* to one of the payers **106***a* by 'dropping' that assignable item (e.g., releasing the touch input on the display **102***aa*) on one of the payer icons **106***b*. Each assignable item may be assigned to one of the payers **106***a* in such a manner. While a touch input device ahs been described to discuss the assignment of assignable items and costs in the primary bill **108***a*, one of skill in the art will recognize that a variety of other methods may be used to assign the assignable items and costs to the payers **106***a* without departing from the scope of the present disclosure (e.g., using non-touchscreen input devices such as a mouse, trackball, keyboard, voice commands, etc.). In an embodiment, any of the assignable items and costs may be further split between two or more payers **106***a* (e.g., by inputting a percentage of the item to assign to each of a plurality of the payers **106***a*, by inputting an amount of the assignable costs (e.g., the assignable costs **108***ba*, **108***ca*, **108***da*, and **108***ea*) to assign to each of a plurality of the payers **106***a*, etc.). Furthermore, multi-touch inputs may be used to split an assignable item between two or more payers **106***a* such as, for example, by using a single touch to select an assignable item, and then multiple touches to separate the assignable item into two or more equal amounts and then dragging respective multiple touches and dropping into the appropriate payer icons **106***b*.

[0038] In an alternative embodiment, illustrated in FIG. **2***b*, the primary bill **108***a* has been sent to the plurality of payer devices from a payee requesting payment. As discussed above, a touch input allows a payer to select one of the assignable item **110***a* (e.g., ENTRÉE 4 in the illustrated embodiment) by touching that assignable item **110***a*, dragging that item across the display (as indicted by arrow **110***b*,) and assigning that assignable item to themselves by 'dropping' that assignable item on the my-bill icon **200**. A payer may assign themselves each assignable item they are responsible for in such a manner, and each assignable item on the primary bill **108***a* may be assigned using the plurality of payer devices that received the primary bill **108***a*. In an embodiment, as items are assigned on one payer device, the primary bill **108***a* is updated on the other payer devices that

received the primary bill **108***a* such that the assigned items are no longer displayed on the primary bill **108***a* on any of the payer devices.

[0039] Referring now to FIG. **1***a*, **1***g*, and **1***h*, a plurality of secondary bills **110***b*, **110***c*, **110***d*, **110***e* may be generated from the assignment of assignable items and associated assignable costs discussed above. Each of the secondary bills **110***b*, **110***c*, **110***d*, **110***e* includes the plurality of the assignable items and assignable costs assigned to the payers **106***aa*, **106***ab*, **106***ac*, and **106***ad* as discussed. Furthermore, the bill splitting system **102***g* may determine a tax that is based on the sum of the assignable costs for the assignable items for each secondary bill and use that tax to provide totals **110***ba*, **110***ca*, **110***da*, and **110***ea* for each respective secondary bill **110***b*, **110***c*, **110***d*, and **110***e*. For example, the payer device(s) may determine an appropriate tax rate from the primary bill **108***a* (e.g., by dividing the tax **108***g* by the subtotal **108***f*), and then apply that tax rate to the sum of the costs associated with each secondary bill. In an embodiment, each secondary bill **110***b*, **110***c*, **110***d*, and **110***e* also includes a tip input **110***bb*, **110***cb*, **110***db*, and **110***eb*. In an embodiment, the tip inputs **110***bb*, **110***cb*, **110***db*, and **110***eb* may include tip amounts that are automatically calculated based on a percentage of each respective total **110***ba*, **110***ca*, **110***da*, and **110***ea*, or the tip inputs **110***bb*, **110***cb*, **110***db*, and **110***eb* may be left blank. In an embodiment, the payer device(s) may check the assignable items/costs assigned and/or the totals **110***ba*, **110***ca*, **110***da*, and **110***ea* determined for the secondary bills **110***b*, **110***c*, **110***d*, and **110***e* against the assignable items, assignable costs, subtotal **108***f*, tax **108***g*, total **108***h*, and/or other information on the primary bill **108***a* to ensure that payment of the secondary bills **110***b*, **110***c*, **110***d*, and **110***e* will provide full payment of the primary bill **108***a*. In an embodiment, the payer device(s) may be used to indicate that one or more of the secondary bills are to be paid in person (e.g., with cash or an on-site credit card transaction rather than with the assistance of a mobile payment provider.)

[0040] Referring now to FIGS. **1***a*, **1***h*, and **1***i*, the method **100** then proceeds to block **112** where at least one secondary bill is sent to at least one second payer device. The payer device(s) (e.g., the payer device **102***a*) may then be used to send the secondary bills (e.g., the secondary bills **110***c*, **110***d*, and **110***e*) to respective payment devices (e.g., payment devices **102***b*, **102***c*, and/or **102***d*) by, for example, using respective send buttons **110***g*, **110***h*, and **110***i* or a send-all button **110***j*. The payer device(s) (e.g., the payer device **102***a*) may also be used to pay a secondary bill (e.g., the secondary bill **110***b*) by, for example, using the go-to-pay button **110***f*. The method **100** then proceeds to block **114** where payment is sent for at least one secondary bill. FIG. **1***i* illustrates the payer device **102***a* displaying the secondary bill **110***d*. In an embodiment, the payer device **102***a* may also display a payee section **114***a* that allows the selection of a payee (e.g., one of the payers **106***a* or one of the payees **106***c*), entry of payee information (e.g., contact information for a payee and/or a variety of other payee information known in the art), or that includes payee information provided in, for example, block **106** of the method **100**. The payer device **102***a* may be used to enter a tip amount in a tip input **114***b*, or the tip input **114***b* may be automatically filled and/or edited. The payer **106***a* may pay the secondary bill **110***d* by selecting a pay button **114***c* to direct a mobile payment provider to pay the amount of the secondary bill **110***d* to the designated payee.

[0041] In an alternative embodiment, illustrated in FIG. **2***c*, the primary bill **108***a* has been sent to the plurality of payer devices from a payee requesting payment as described above with reference to FIGS. **2***a* and **2***b*. As can be seen in FIG. **2***c*, the payee section **114***a* is a pre-filled section with the payee information that may have been determined in block **106** of the method **100** (e.g., with one of the payees **106***c* as the payee), or that may have been included in the payment request sent by the payee requesting payment. The payer devices (e.g., the payer device **102***a*) may be used to select a confirm-and-pay icon **202** that will direct a mobile payment provider to send payment to the payee **106***c* designated in the payee section **114***a*. In an embodiment, the payee section **114***a* may be editable to change the payee in the payee section **114***a*.

[0042] In yet another alternative embodiment, the bill splitting system **102***g*, illustrated in FIG. **1***b*, may be performed primarily by a payee. For example, a payee may generate the primary bill **108***a* on a payee device (e.g., the payee device **102***e* or **102***f*) and may select payers substantially as discussed above with reference to FIG. **1***d* with the payee device replacing the payer device **102***a*. The payee may then split the bill by assigning assignable items and assignable costs on the primary bill **108***a* amongst the selected payers, substantially as described above with reference to FIG. **1***g* with the payee device replacing the payer device **102***a*, to produce the secondary bills illustrated in FIG. **1***h*. The payee may then send the secondary bills to each of the payers, and those payers may provide payment for the secondary bills substantially as described above with reference to FIG. **1***i* and/or **2***c*.

[0043] In yet another alternative embodiment, the bill splitting system **102***g*, illustrated in FIG. **1***b*, may be performed by a payer that wishes the pay the bill using conventional methods (e.g., a physical credit card or cash transaction at the place of business of the payee.) For example, a payer may select payers substantially as discussed above with reference to FIG. **1***d* with the payer device **102***a*. The payer may then split the bill by assigning assignable items and assignable costs on the primary bill **108***a* amongst the selected payers, substantially as described above with reference to FIG. **1***g* with the payer device **102***a*, to produce the secondary bills illustrated in FIG. **1***h*. The payer may then pay the bill using conventional methods and send the secondary bills to each of the secondary payers, and those secondary payers may provide payment for the secondary bills to the payer who paid the bill.

[0044] Referring now to FIG. **3**, an embodiment of a networked system **300** used in the bill splitting system **102***g* is illustrated. The networked system **300** includes a plurality of payer devices **302**, a plurality of payee devices **304**, and a payment service provider **306** in communication over a network **308**. The payer devices **302** may be any or all of the payer devices **102***a*, **102***b*, **102***c*, and/or **102***d*. The payee devices **304** may be any or all of the payee devices **102***e* and/or **102***f*. The payment service provider **308** may be a payment service provider such as, for example, PayPal Inc. of San Jose, Calif.

[0045] The payer devices **302**, a plurality of payee devices **304**, and a payment service provider **306** (discussed in further detail below) may each include one or more processors, memories, and other appropriate components for

executing instructions such as program code and/or data stored on one or more computer readable mediums to implement the various applications, data, and steps described herein. For example, such instructions may be stored in one or more computer readable mediums such as memories or data storage devices internal and/or external to various components of the system **300**, and/or accessible over the network **308**.

[0046] The network **308** may be implemented as a single network or a combination of multiple networks. For example, in various embodiments, the network **308** may include the Internet and/or one or more intranets, landline networks, wireless networks, and/or other appropriate types of networks.

[0047] The payer device **302** may be implemented using any appropriate combination of hardware and/or software configured for wired and/or wireless communication over network **308**. For example, in one embodiment, the payer device **302** may be implemented as a personal computer of a payer in communication with the Internet. In other embodiments, the payer device **302** may be a smart phone, personal digital assistant (PDA), laptop computer, and/or other types of computing devices.

[0048] The payer device **302** may include one or more browser applications which may be used, for example, to provide a convenient interface to permit the payer to browse information available over the network **308**. For example, in one embodiment, the browser application may be implemented as a web browser configured to view information available over the Internet.

[0049] The payer device **302** may also include one or more toolbar applications which may be used, for example, to provide payer-side processing for performing desired tasks in response to operations selected by the payer. In one embodiment, the toolbar application may display a user interface in connection with the browser application.

[0050] The payer device **302** may further include other applications as may be desired in particular embodiments to provide desired features to the payer device **302**. In particular, the other applications may include a payment application for payments through the payment service provider **306**. The other applications may also include security applications for implementing user-side security features, programmatic user applications for interfacing with appropriate application programming interfaces (APIs) over the network **308**, or other types of applications. Email and/or text applications may also be included, which allow the payer to send and receive emails and/or text messages through the network **308**. The payer device **302** includes one or more user and/or device identifiers which may be implemented, for example, as operating system registry entries, cookies associated with the browser application, identifiers associated with hardware of the payer device **302**, or other appropriate identifiers, such as a phone number. In one embodiment, the user identifier may be used by the payment service provider **306** to associate the payer with a particular account maintained by the payment service provider **306** as further described herein.

[0051] The payee device **304** may be maintained, for example, by an on-line merchant, digital goods seller, individual seller, and/or application developer offering various products and/or services in exchange for payment to be received over the network **308**. In this regard, the payee device **304** may include a database identifying available products and/or services (e.g., collectively referred to as items) which may be made available for viewing and purchase by the payer.

[0052] The payee device **304** also includes a checkout application which may be configured to facilitate the purchase by the payee of items. The checkout application may be configured to accept payment information from the payee and/or from the payment service provider **306** over the network **308**.

[0053] Referring now to FIG. **4**, an embodiment of a payer device **400** is illustrated. The payer device **400** may be any or all of the payer devices **102***a*, **102***b*, **102***c*, and/or **102***d*. The payer device **400** includes a chassis **402** having a display **404** and an input device including the display **404** and a plurality of input buttons **406**. One of skill in the art will recognize that the payer device **400** is a portable or mobile phone including a touch screen input device and a plurality of input buttons that allow the functionality discussed above with reference to the method **100**. However, a variety of other portable or mobile payer devices may be used in the method **100** without departing from the scope of the present disclosure.

[0054] Referring now to FIGS. **3** and **5**, an embodiment of a computer system **500** suitable for implementing, for example, the payer devices **102***a*, **102***b*, **102***c*, **102***d*, **302**, and/or **400**, is illustrated. In various implementations, the payer device(s) may comprise a computing device (e.g., a computer, laptop, smart phone, PDA, etc.) capable of communicating with the network **308**. Furthermore, the payee device(s) **102***e*, **102***f*, and/or **304** and/or the payment service provider **306** may implement the computer system **500** as well. It should be appreciated that other devices utilized by payers, payees, and payment providers in the bill splitting system **102***g* may be implemented as the computer system **200** in a manner as follows.

[0055] In accordance with various embodiments of the present disclosure, computer system **500**, such as a computer and/or a network server, includes a bus **502** or other communication mechanism for communicating information, which interconnects subsystems and components, such as a processing component **504** (e.g., processor, micro-controller, digital signal processor (DSP), etc.), a system memory component **506** (e.g., RAM), a static storage component **508** (e.g., ROM), a disk drive component **510** (e.g., magnetic or optical), a network interface component **512** (e.g., modem or Ethernet card), a display component **514** (e.g., CRT or LCD), an input component **518** (e.g., keyboard, keypad, or virtual keyboard), a cursor control component **520** (e.g., mouse, pointer, or trackball), and/or a camera **522**. In one implementation, the disk drive component **510** may comprise a database having one or more disk drive components.

[0056] In accordance with embodiments of the present disclosure, the computer system **500** performs specific operations by the processor **504** executing one or more sequences of instructions contained in system the memory component **506**, such as described herein with respect to the payer device **302**, the payee device **304**, and/or the payment service provider **306**. Such instructions may be read into the system memory component **506** from another computer readable medium, such as the static storage component **508** or the disk drive component **510**. In other embodiments, hard-wired circuitry may be used in place of or in combination with software instructions to implement the present disclosure.

[0057] Logic may be encoded in a computer readable medium, which may refer to any medium that participates in providing instructions to the processor **504** for execution. Such a medium may take many forms, including but not limited to, non-volatile media, volatile media, and transmission media. In various implementations, non-volatile media includes optical or magnetic disks, such as the disk drive component **510**, volatile media includes dynamic memory, such as the system memory component **506**, and transmission media includes coaxial cables, copper wire, and fiber optics, including wires that comprise the bus **502**. In one example, transmission media may take the form of acoustic or light waves, such as those generated during radio wave and infrared data communications.

[0058] Some common forms of computer readable media includes, for example, floppy disk, flexible disk, hard disk, magnetic tape, any other magnetic medium, CD-ROM, any other optical medium, punch cards, paper tape, any other physical medium with patterns of holes, RAM, PROM, EPROM, FLASH-EPROM, any other memory chip or cartridge, carrier wave, or any other medium from which a computer is adapted to read.

[0059] In various embodiments of the present disclosure, execution of instruction sequences to practice the present disclosure may be performed by the computer system **500**. In various other embodiments of the present disclosure, a plurality of the computer systems **500** coupled by a communication link **524** to the network **308** (e.g., such as a LAN, WLAN, PTSN, and/or various other wired or wireless networks, including telecommunications, mobile, and cellular phone networks) may perform instruction sequences to practice the present disclosure in coordination with one another.

[0060] The computer system **500** may transmit and receive messages, data, information and instructions, including one or more programs (i.e., application code) through the communication link **524** and the network interface component **512**. The network interface component **512** may include an antenna, either separate or integrated, to enable transmission and reception via the communication link **524**. Received program code may be executed by processor **504** as received and/or stored in disk drive component **510** or some other non-volatile storage component for execution.

[0061] Referring now to FIGS. **3** and **6**, an embodiment of a payer device **600** is illustrated. The payer device includes a communication engine **602** that is coupled to the network **308**, a bill recognition engine **604**, and a bill splitting engine **606**. The bill recognition engine **604** is coupled to the bill splitting engine **606** which is coupled to an input device **608**. The communication engine **602** may be software or instructions stored on a computer-readable medium that allows the payer device to send and receive information over the network **208**. The bill recognition engine **604** may be software or instructions stored on a computer-readable medium that is operable to receive information from the communication engine **602** and perform optical character recognition techniques on a physical bill to produce a primary bill, as discussed above. The bill splitting engine **606** may be software or instructions stored on a computer-readable medium that is operable to receive the primary bill from the communication engine **602** or the bill recognition engine **604**, and also receive inputs from the input device **608** in order to assign items on the primary bill to payers, as discussed above. The input device **608** may be any of the input devices discussed above.

[0062] Where applicable, various embodiments provided by the present disclosure may be implemented using hardware, software, or combinations of hardware and software. Also, where applicable, the various hardware components and/or software components set forth herein may be combined into composite components comprising software, hardware, and/or both without departing from the scope of the present disclosure. Where applicable, the various hardware components and/or software components set forth herein may be separated into sub-components comprising software, hardware, or both without departing from the scope of the present disclosure. In addition, where applicable, it is contemplated that software components may be implemented as hardware components and vice-versa.

[0063] Software, in accordance with the present disclosure, such as program code and/or data, may be stored on one or more computer readable mediums. It is also contemplated that software identified herein may be implemented using one or more general purpose or specific purpose computers and/or computer systems, networked and/or otherwise. Where applicable, the ordering of various steps described herein may be changed, combined into composite steps, and/or separated into sub-steps to provide features described herein.

[0064] The foregoing disclosure is not intended to limit the present disclosure to the precise forms or particular fields of use disclosed. As such, it is contemplated that various alternate embodiments and/or modifications to the present disclosure, whether explicitly described or implied herein, are possible in light of the disclosure. For example, the above embodiments have focused on merchants and seller; however, a user or consumer can pay virtually, or otherwise interact with any type of recipient, including charities and individuals. The payment does not have to involve a purchase, but can be a loan, a charitable contribution, a gift, etc. Thus, merchant as used herein can also include charities, individuals, and any other entity or person receiving a payment from a user. Having thus described embodiments of the present disclosure, persons of ordinary skill in the art will recognize that changes may be made in form and detail without departing from the scope of the present disclosure. Thus, the present disclosure is limited only by the claims.

What is claimed is:

1. A Near Field Communication (NFC) based mobile device detection and payment system, comprising:

a first mobile payer device that is associated with a first payer and that is configured to perform operations that include:

identifying, via communications enabled using a Near Field Communication (NFC) subsystem, a payment group that includes the first payer associated with the first mobile payer device and a respective second payer associated with each of at least one second mobile payer device;

retrieving, via communications with a payee device that is associated with a payee, a graphical electronic primary bill that includes a plurality of assignable item elements that identify respective items ordered by the payment group, wherein the graphical electronic primary bill is also provided to each of the at least one second mobile payer devices;

displaying the graphical electronic primary bill that is simultaneously displayed on each of the at least one second mobile payer devices;

causing, in response to receiving a first payer selection of at least one of the plurality of assignable item elements included on the graphical electronic primary bill:

the respective item identified by the selected assignable item element and ordered by the payment group to be assigned to a first payer secondary bill; and

the graphical electronic primary bill to be updated and communicated to each of the at least one second mobile payer devices such that each of the respective items assigned to the first payer secondary bill are removed from the graphical electronic primary bill that is simultaneously displayed on the first mobile payer device and each of the at least one second mobile payer devices;

receiving, via communication with each of the at least one second mobile payer devices, updates of the graphical electronic primary bill that cause each of the respective items assigned to second payer secondary bills to be removed from the graphical electronic primary bill that is simultaneously displayed on the first mobile payer device and each of the at least one second mobile payer devices; and

sending a first payer instruction to provide a payment to the payee for the first payer secondary bill;

a payment provider device that is configured to perform operations that include:

receiving a respective second payer instruction to provide the payment to the payee for the first payer secondary bill;

receiving a respective instruction to provide a payment to the payee for each second payer secondary bill; and

causing a payment to be provided to the payee for the first payer secondary bill and each second payer secondary bill.

2. The system of claim **1**, wherein the first mobile payer device is configured to retrieve the graphical electronic primary bill by performing operations that include:

performing a scanning operation on a physical bill.

3. The system of claim **1**, wherein the first mobile payer device is configured to identify the payment group by performing operations that include:

identifying, via communications enabled using the NFC subsystem, a plurality of mobile payer device;

displaying respective graphical identification elements associated each of the plurality of mobile payer devices; and

receiving selections of a subset of the graphical identification elements that identify the payment group.

4. The system of claim **1**, wherein the first mobile payer device is further configured to perform operations that include:

causing, in response to receiving an item split selection directed to a first assignable item element of the plurality of assignable item elements included on the graphical electronic primary bill:

a portion of the respective item identified by the selected first assignable item element and ordered by the payment group to be assigned to the first payer secondary bill;

the graphical electronic primary bill to be updated and communicated to each of the at least one second mobile payer devices such that a remaining portion of the respective item identified by the selected first assignable item element and ordered by the payment group is assignable to at least one of the second payer secondary bills.

5. The system of claim **4**, wherein the first mobile payer device is further configured to perform operations comprising:

receiving a multi-touch input directed to the first assignable item element; and

determining that the multi-touch input provides the item split selection.

6. The system of claim **1**, wherein the first mobile payer device is further configured to perform operations that include:

determining a tax associated with the each of the respective items assigned to the first payer secondary bill; and

including the tax as part of the first payer secondary bill.

7. The system of claim **1**, wherein the first mobile payer device is further configured to perform operations that include:

receiving a tip amount for the first payer secondary bill; and

including the tip amount as part of the first payer secondary bill.

8. A non-transitory machine-readable medium having stored thereon machine-readable instructions executable to cause a machine to perform operations comprising:

identifying, via communications enabled using a Near Field Communication (NFC) subsystem, a payment group that includes a first payer associated with a first mobile payer device and a respective second payer associated with each of at least one second mobile payer device;

retrieving, via communications with a payee device that is associated with a payee, a graphical electronic primary bill that includes a plurality of assignable item elements that identify respective items ordered by the payment group, wherein the graphical electronic primary bill is also provided to each of the at least one second mobile payer devices;

displaying the graphical electronic primary bill that is simultaneously displayed on each of the at least one second mobile payer devices;

causing, in response to receiving a first payer selection of at least one of the plurality of assignable item elements included on the graphical electronic primary bill:

the respective item identified by the selected assignable item element and ordered by the payment group to be assigned to a first payer secondary bill; and

the graphical electronic primary bill to be updated and communicated to each of the at least one second mobile payer devices such that each of the respective items assigned to the first payer secondary bill are removed from the graphical electronic primary bill that is simultaneously displayed on the first mobile payer device and each of the at least one second mobile payer devices;

receiving, via communication with each of the at least one second mobile payer devices, updates of the graphical electronic primary bill that cause each of the respective items assigned to second payer secondary bills to be removed from the graphical electronic primary bill that is simultaneously displayed on the first mobile payer device and each of the at least one second mobile payer devices; and

sending a first payer instruction to provide a payment to the payee for the first payer secondary bill.

9. The non-transitory machine-readable medium of claim **8**, wherein the retrieving the graphical electronic primary bill includes performing operations that further comprise:

performing a scanning operation on a physical bill.

10. The non-transitory machine-readable medium of claim **8**, wherein the identifying the payment group includes performing operations that further comprise:

identifying, via communications enabled using the NFC subsystem, a plurality of mobile payer device;

displaying respective graphical identification elements associated each of the plurality of mobile payer devices; and

receiving selections of a subset of the graphical identification elements that identify the payment group.

11. The non-transitory machine-readable medium of claim **8**, wherein the operations further comprise:

causing, in response to receiving an item split selection directed to a first assignable item element of the plurality of assignable item elements included on the graphical electronic primary bill:

a portion of the respective item identified by the selected first assignable item element and ordered by the payment group to be assigned to the first payer secondary bill;

the graphical electronic primary bill to be updated and communicated to each of the at least one second mobile payer devices such that a remaining portion of the respective item identified by the selected first assignable item element and ordered by the payment group is assignable to at least one of the second payer secondary bills.

12. The non-transitory machine-readable medium of claim **11**, wherein the operations further comprise:

receiving a multi-touch input directed to the first assignable item element; and

determining that the multi-touch input provides the item split selection.

13. The non-transitory machine-readable medium of claim **8**, wherein the operations further comprise:

determining a tax associated with the each of the respective items assigned to the first payer secondary bill; and

including the tax as part of the first payer secondary bill.

14. The non-transitory machine-readable medium of claim **8**, wherein the operations further comprise:

receiving a tip amount for the first payer secondary bill; and

including the tip amount as part of the first payer secondary bill.

15. A method for Near Field Communication (NFC) based mobile device detection and payment, comprising:

identifying, by a first payer device via communications enabled using a Near Field Communication (NFC) subsystem, a payment group that includes a first payer associated with the first mobile payer device and a respective second payer associated with each of at least one second mobile payer device;

retrieving, by the first payer device via communications with a payee device that is associated with a payee, a graphical electronic primary bill that includes a plurality of assignable item elements that identify respective items ordered by the payment group, wherein the graphical electronic primary bill is also provided to each of the at least one second mobile payer devices;

displaying, by the first payer device, the graphical electronic primary bill that is simultaneously displayed on each of the at least one second mobile payer devices;

causing, by the first payer device in response to receiving a first payer selection of at least one of the plurality of assignable item elements included on the graphical electronic primary bill:

the respective item identified by the selected assignable item element and ordered by the payment group to be assigned to a first payer secondary bill; and

the graphical electronic primary bill to be updated and communicated to each of the at least one second mobile payer devices such that each of the respective items assigned to the first payer secondary bill are removed from the graphical electronic primary bill that is simultaneously displayed on the first mobile payer device and each of the at least one second mobile payer devices;

receiving, by the first payer device via communication with each of the at least one second mobile payer devices, updates of the graphical electronic primary bill that cause each of the respective items assigned to second payer secondary bills to be removed from the graphical electronic primary bill that is simultaneously displayed on the first mobile payer device and each of the at least one second mobile payer devices; and

sending, by the first payer device, a first payer instruction to provide a payment to the payee for the first payer secondary bill.

16. The method of claim **15**, wherein the retrieving the graphical electronic primary bill further comprises:

performing, by the first payer device, a scanning operation on a physical bill.

17. The method of claim **15**, wherein the identifying the payment group further comprises:

identifying, by the first payer device via communications enabled using the NFC subsystem, a plurality of mobile payer device;

displaying, by the first payer device, respective graphical identification elements associated each of the plurality of mobile payer devices; and

receiving, by the first payer device, selections of a subset of the graphical identification elements that identify the payment group.

18. The method of claim **15**, further comprising:

causing, by the first payer device in response to receiving an item split selection directed to a first assignable item element of the plurality of assignable item elements included on the graphical electronic primary bill:

a portion of the respective item identified by the selected first assignable item element and ordered by the payment group to be assigned to the first payer secondary bill;

the graphical electronic primary bill to be updated and communicated to each of the at least one second

mobile payer devices such that a remaining portion of the respective item identified by the selected first assignable item element and ordered by the payment group is assignable to at least one of the second payer secondary bills.

19. The method of claim **18**, further comprising:

receiving, by the first payer device, a multi-touch input directed to the first assignable item element; and

determining, by the first payer device, that the multi-touch input provides the item split selection.

20. The method of claim **15**, further comprising:

determining a tax associated with the each of the respective items assigned to the first payer secondary bill; and

including the tax as part of the first payer secondary bill.

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