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**Chitilian et al.**

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(54) **HANDS-FREE TRANSACTIONS WITH VOICE RECOGNITION**

(58) **Field of Classification Search**

CPC ..... G06Q 20/00; G06Q 20/20; G06Q 20/322; G06Q 20/3224; G06Q 20/325;

(Continued)

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(56) **References Cited**

U.S. PATENT DOCUMENTS

5,280,527 A 1/1994 Gullman et al.  
6,185,545 B1 2/2001 Resnick et al.

(Continued)

FOREIGN PATENT DOCUMENTS

CN 102971758 3/2013  
EP 1246144 10/2002

(Continued)

(73) Assignee: **GOOGLE LLC**, Mountain View, CA (US)

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OTHER PUBLICATIONS

Baharlou, "International Preliminary Report on Patentability issued in International Application No. PCT/ US2015/040067", mailed on Jan. 26, 2017, 7 pages.

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(65) **Prior Publication Data**

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(57) **ABSTRACT**

Conducting hands-free transactions comprises a server at a payment processing system, a user computing device, and a merchant computing device. The payment processing system receives a communication from a hands-free payment application on a user device, the communication comprising a first transaction token, an identification of a user account, and a beacon identifier. The merchant may provide a challenge to the user and use the response to identify the token and account of the user. The merchant computing device can use voice patterns of the user to assist in identifying the token and account of the user. The system receives from the merchant computing device a transaction request, the trans-

(Continued)

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**G06Q 20/32** (2012.01)

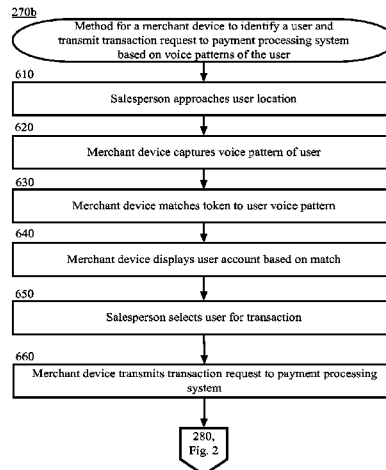
**G06Q 20/00** (2012.01)

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action request comprising the first transaction token and transaction data associated with the transaction request. The system determines that the transaction is for an amount less than a configured transaction limit and communicates a request for an authorization of the transaction.

**20 Claims, 9 Drawing Sheets**

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(51) **Int. Cl.**

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- G06Q 20/38* (2012.01)
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- G06Q 20/42* (2012.01)
- G10L 15/08* (2006.01)
- G06Q 20/02* (2012.01)

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

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(58) **Field of Classification Search**

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 See application file for complete search history.

(56)

**References Cited**

U.S. PATENT DOCUMENTS

6,230,148 B1 5/2001 Pare, Jr. et al.  
 6,601,762 B2 8/2003 Piotrowski  
 6,766,306 B1 7/2004 Matsuyama  
 6,783,459 B2 8/2004 Cumbers  
 6,847,953 B2 1/2005 Kuo  
 6,934,381 B1 8/2005 Klein et al.  
 7,665,657 B2 2/2010 Huh  
 7,761,381 B1 7/2010 Fitch et al.  
 8,254,647 B1 8/2012 Nechyba et al.  
 8,396,809 B1 3/2013 Raff et al.  
 8,558,663 B2 10/2013 Newman et al.  
 8,694,352 B1 4/2014 Hawkins et al.  
 8,694,792 B2 4/2014 Whillock  
 8,768,838 B1 7/2014 Hoffman  
 8,793,509 B1 7/2014 Nelson et al.  
 8,930,274 B1 1/2015 Brickell et al.  
 9,229,623 B1 1/2016 Penilla et al.  
 9,264,850 B1 2/2016 Lee  
 9,373,112 B1 6/2016 Henderson et al.  
 9,519,901 B1 12/2016 Dorogusker  
 9,619,803 B2 4/2017 Chandrasekaran et al.  
 9,652,759 B2 5/2017 Chitilian et al.

9,652,791 B1 5/2017 Brock  
 9,665,858 B1 5/2017 Kumar  
 9,747,587 B2 8/2017 Diehl  
 9,760,905 B2 9/2017 Yoder et al.  
 9,770,206 B2 9/2017 Ashokan  
 9,805,366 B1 10/2017 Wilson et al.  
 9,881,303 B2 1/2018 Vohra et al.  
 9,972,004 B1 5/2018 Donavalli et al.  
 10,185,958 B2 1/2019 Henderson et al.  
 2001/0013545 A1 8/2001 Hogan  
 2001/0034724 A1 10/2001 Thieme  
 2001/0044744 A1 11/2001 Rhoads  
 2002/0026575 A1 2/2002 Wheeler  
 2002/0132663 A1 9/2002 Cumbers  
 2002/0164022 A1 11/2002 Strasser et al.  
 2002/0190124 A1\* 12/2002 Piotrowski ..... G07C 9/37  
 2003/0028481 A1 2/2003 Flitcroft et al.  
 2003/0149661 A1 8/2003 Mitchell et al.  
 2004/0039692 A1 2/2004 Shields et al.  
 2004/0117625 A1 6/2004 Grawrock  
 2005/0129286 A1 6/2005 Hekimian  
 2005/0165667 A1 7/2005 Cox  
 2005/0246293 A1 11/2005 Ong  
 2006/0056662 A1 3/2006 Thieme et al.  
 2006/0203776 A1 9/2006 Persaud et al.  
 2006/0235761 A1 10/2006 Johnson  
 2007/0084913 A1 4/2007 Weston  
 2007/0183634 A1 8/2007 Dussich et al.  
 2007/0203999 A1 8/2007 Townsley  
 2008/0169903 A1 7/2008 Fein et al.  
 2009/0005987 A1 1/2009 Vengroff et al.  
 2009/0018924 A1 1/2009 Roberts  
 2009/0140838 A1 6/2009 Newnan et al.  
 2009/0292641 A1\* 11/2009 Weiss ..... G06F 21/6245  
 2009/0313129 A1 12/2009 Rothschild  
 2009/0325606 A1 12/2009 Farris  
 2009/0327133 A1 12/2009 Aharoni et al.  
 2010/0084462 A1 4/2010 Scipioni et al.  
 2010/0114776 A1 5/2010 Weller et al.  
 2010/0211966 A1 8/2010 Zbang et al.  
 2011/0047045 A1 2/2011 Brody et al.  
 2011/0161233 A1 6/2011 Tieken  
 2011/0178883 A1 7/2011 Granbery et al.  
 2011/0190055 A1 8/2011 Leyvand et al.  
 2011/0257985 A1 10/2011 Goldstein  
 2011/0258122 A1 10/2011 Shader et al.  
 2011/0264543 A1 10/2011 Taveau et al.  
 2011/0295707 A1 12/2011 Gui et al.  
 2011/0307403 A1 12/2011 Rostampour et al.  
 2012/0030006 A1 2/2012 Yoder et al.  
 2012/0115512 A1 5/2012 Grainger et al.  
 2012/0166314 A1 6/2012 Kimberg  
 2012/0213420 A1 8/2012 Steiner et al.  
 2012/0257797 A1 10/2012 Leyvand et al.  
 2012/0284193 A1 11/2012 Bharghavan et al.  
 2012/0310743 A1 12/2012 John  
 2012/0316953 A1 12/2012 Ramchandani et al.  
 2013/0006784 A1 1/2013 Krauss et al.  
 2013/0006810 A1 1/2013 Elias  
 2013/0024308 A1 1/2013 Ramaswamy et al.  
 2013/0031006 A1 1/2013 Mccullagh et al.  
 2013/0035979 A1 2/2013 Tenbrock  
 2013/0132274 A1 5/2013 Henderson et al.  
 2013/0134215 A1 5/2013 Ramachandran et al.  
 2013/0226791 A1 8/2013 Springer et al.  
 2013/0226800 A1 8/2013 Patel et al.  
 2013/0275247 A1 10/2013 Ramaratnam et al.  
 2013/0282502 A1 10/2013 Jooste  
 2013/0282582 A1 10/2013 Pereira et al.  
 2013/0297730 A1 11/2013 Zhang et al.  
 2013/0346201 A1 12/2013 Bilange  
 2014/0006123 A1 1/2014 Kepecs  
 2014/0032415 A1 1/2014 Lee et al.  
 2014/0040051 A1 2/2014 Ovick et al.  
 2014/0040125 A1 2/2014 Kunz et al.  
 2014/0040135 A1 2/2014 Ovick et al.  
 2014/0040139 A1 2/2014 Brudnicki et al.

(56)

## References Cited

## U.S. PATENT DOCUMENTS

2014/0053255 A1 2/2014 Lindteigen et al.  
 2014/0067649 A1 3/2014 Kannan et al.  
 2014/0067679 A1 3/2014 O'Reilly et al.  
 2014/0074709 A1 3/2014 Green et al.  
 2014/0086590 A1 3/2014 Ganick et al.  
 2014/0164254 A1 6/2014 Dimmick  
 2014/0165187 A1 6/2014 Daesung et al.  
 2014/0189808 A1 7/2014 Mahaffey et al.  
 2014/0201080 A1 7/2014 Just  
 2014/0222596 A1 8/2014 S  
 2014/0227999 A1 8/2014 Ferlin  
 2014/0237587 A1 8/2014 Forbes et al.  
 2014/0279458 A1 9/2014 Holman et al.  
 2014/0330659 A1\* 11/2014 Yopp ..... G06Q 20/322  
 705/16  
 2014/0351072 A1 11/2014 Wieler et al.  
 2014/0351132 A1 11/2014 Wieler et al.  
 2014/0372128 A1\* 12/2014 Sheets ..... G06Q 20/20  
 704/273  
 2014/0372308 A1\* 12/2014 Sheets ..... G06Q 20/20  
 705/44  
 2015/0006271 A1 1/2015 Oppenheim et al.  
 2015/0012418 A1 1/2015 Chu  
 2015/0013003 A1 1/2015 Osterlund et al.  
 2015/0046990 A1 2/2015 Oberheide et al.  
 2015/0066671 A1 3/2015 Nichols et al.  
 2015/0079942 A1 3/2015 Kostka et al.  
 2015/0081550 A1 3/2015 Priebatsch et al.  
 2015/0106216 A1 4/2015 Kenderov  
 2015/0120473 A1 4/2015 Jung et al.  
 2015/0161417 A1 6/2015 Kaplan et al.  
 2015/0170145 A1 6/2015 Patel et al.  
 2015/0181384 A1 6/2015 Mayor et al.  
 2015/0186871 A1 7/2015 Laracey  
 2015/0261787 A1 9/2015 Hu et al.  
 2015/0269583 A1 9/2015 Taylor et al.  
 2015/0302412 A1 10/2015 Bhanoo  
 2015/0309569 A1 10/2015 Kohlhoff et al.  
 2015/0356563 A1 12/2015 Vohra et al.  
 2015/0371234 A1 12/2015 Huang et al.  
 2015/0373762 A1\* 12/2015 Raj ..... H04L 67/12  
 370/329  
 2015/0379506 A1 12/2015 Griffin  
 2015/0379650 A1 12/2015 Theobald  
 2016/0012413 A1 1/2016 Chitilian et al.  
 2016/0012414 A1 1/2016 Chitilian et al.  
 2016/0012420 A1 1/2016 Chitilian et al.  
 2016/0012421 A1 1/2016 Chitilian et al.  
 2016/0012422 A1 1/2016 Chitilian et al.  
 2016/0012423 A1 1/2016 Chitilian et al.  
 2016/0012426 A1 1/2016 Chitilian et al.  
 2016/0012428 A1 1/2016 Halden et al.  
 2016/0012430 A1 1/2016 Chandrasekaran et al.  
 2016/0019547 A1 1/2016 Gurmani et al.  
 2016/0042346 A1 2/2016 Pastore et al.  
 2016/0048846 A1 2/2016 Douglas et al.  
 2016/0063435 A1 3/2016 Shah et al.  
 2016/0063459 A1 3/2016 Li et al.  
 2016/0063476 A1\* 3/2016 Baldie ..... H04W 48/12  
 705/44  
 2016/0321633 A1 11/2016 Chandrasekaran et al.  
 2016/0321671 A1 11/2016 Chandrasekaran et al.  
 2016/0323274 A1 11/2016 Chandrasekaran et al.  
 2016/0342967 A1 11/2016 Proctor et al.  
 2016/0353274 A1 12/2016 Chichierchia  
 2016/0364701 A1 12/2016 Nayfack  
 2017/0024731 A1 1/2017 Gullett et al.  
 2017/0053276 A1 2/2017 Gullett et al.  
 2017/0091765 A1 3/2017 Lloyd et al.  
 2017/0116589 A1 4/2017 Krishnaiah  
 2017/0193480 A1 7/2017 Chandrasekaran et al.  
 2017/0221065 A1 8/2017 Chitilian et al.  
 2017/0255923 A1 9/2017 Dieter et al.  
 2017/0255941 A1 9/2017 Chandrasekaran et al.

2017/0255942 A1 9/2017 Chandrasekaran et al.  
 2017/0300957 A1 10/2017 Yoder et al.  
 2017/0323299 A1 11/2017 Davis  
 2017/0364901 A1 12/2017 Chandrasekaran et al.  
 2018/0032798 A1 2/2018 Setchell  
 2019/0130408 A1 5/2019 Chitilian et al.  
 2019/0266598 A1 8/2019 Chitilian et al.

## FOREIGN PATENT DOCUMENTS

JP 2003099691 4/2003  
 JP 2006139476 6/2006  
 JP 2009211488 9/2009  
 JP 2011014174 1/2011  
 JP 2014099156 5/2014  
 JP 2014164367 9/2014  
 JP 2014191416 10/2014  
 JP 2016024758 2/2016  
 KR 20120011776 2/2012  
 KR 101242390 3/2013  
 KR 20150003922 1/2015  
 KR 20150011046 1/2015  
 WO WO 02099758 12/2002  
 WO WO 2005031663 4/2005  
 WO WO 2008101142 8/2008  
 WO WO 2014045713 3/2014  
 WO WO 2014092233 6/2014  
 WO WO 2014130222 8/2014  
 WO WO 2014182787 11/2014  
 WO WO 2015072191 5/2015  
 WO WO 2016007445 1/2016  
 WO WO 2016007801 1/2016  
 WO WO 2016007934 1/2016  
 WO WO 2016033468 3/2016  
 WO WO 2017151700 9/2017  
 WO WO 2017151815 9/2017  
 WO WO 2017151825 9/2017  
 WO WO 2017222837 12/2017  
 WO WO 2018026688 2/2018

## OTHER PUBLICATIONS

Baharlou, "International Preliminary Report on Patentability issued in International Application No. PCT/US2017/020270", mailed on Sep. 13, 2018, 8 pages.  
 Bartley, "U.S. Office Action issued in co-pending U.S. Appl. No. 15/446,734, filed Mar. 1, 2017", mailed on Apr. 1, 2019, 35 pages.  
 Bartley, "U.S. Office Action issued in co-pending U.S. Appl. No. 15/446,734, filed Mar. 1, 2017", mailed on Jul. 24, 2019, 51 pages.  
 Berlea, "Extended European Search Report issued in European Application No. 17760676.1.", mailed on Jul. 30, 2019, 8 pages.  
 Berthon, "International Search Report and Written Opinion issued in International Application No. PCT/US2015/040067", mailed on Oct. 26, 2015, 8 pages.  
 Berthon, "International Search Report and Written Opinion issued in International Application No. PCT/US2017/036883", mailed on Sep. 18, 2017, 13 pages.  
 Berthon, "International Search Report and Written Opinion issued in International Application No. PCTUS2015/039836", mailed on Oct. 26, 2015, 10 pages.  
 Chang, "U.S. Office Action issued in co-pending U.S. Appl. No. 15/664,640, filed Jul. 7, 2017", mailed on Feb. 5, 2019, 8 pages.  
 Dega, "U.S. Office Action issued in co-pending U.S. Appl. No. 15/446,990, filed Mar. 1, 2017", mailed on May 2, 2019, 16 pages.  
 Dega, "U.S. Office Action issued in co-pending U.S. Appl. No. 15/446,990, filed Mar. 1, 2017", mailed on Nov. 29, 2019, 20 pages.  
 Getachew, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/540,034, filed Nov. 12, 2014", mailed on Dec. 19, 2017, 26 pages.  
 Getachew, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/540,034, filed Nov. 12, 2014", mailed on Feb. 19, 2019, 30 pages.  
 Getachew, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/540,034, filed Nov. 12, 2014", mailed on Jul. 25, 2018, 26 pages.

(56)

## References Cited

## OTHER PUBLICATIONS

- Getachew, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/540,034, filed Nov. 12, 2014", mailed on Jun. 23, 2017, 15 pages.
- Getachew, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/540,036, filed Nov. 12, 2014", mailed on Aug. 3, 2018, 18 pages.
- Getachew, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/540,036, filed Nov. 12, 2014", mailed on Dec. 19, 2017, 24 pages.
- Getachew, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/540,036, filed Nov. 12, 2014", mailed on Jun. 16, 2017, 16 pages.
- Getachew, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/540,036, filed Nov. 12, 2014", mailed on Mar. 6, 2019, 23 pages.
- Gottschalk, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/797,029, filed Jul. 10, 2015", mailed Jun. 25, 2019, 16 pages.
- Gottschalk, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/797,029, filed Jul. 10, 2015", mailed on Apr. 9, 2018, 13 pages.
- Gottschalk, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/797,029, filed Jul. 10, 2015", mailed on Oct. 17, 2018, 14 pages.
- Kaizuka, "Japanese Office Action issued in Japanese Application No. 2018-531520", mailed on Aug. 5, 2019, 04 pages of English Translation and 03 pages of Japanese Office Action.
- Kaizuka, "Japanese Office Action issued in Japanese Application No. 2018-536774", mailed on Aug. 5, 2019, 05 pages of English Translation and 04 pages of Japanese Office Action.
- Lander, "United Kingdom Office Action received for United Kingdom Patent Application No. 1709634.8", mailed on Aug. 29, 2019, 4 pages.
- Lander, "United Kingdom Office Action received for United Kingdom Patent Application No. 1709634.8", mailed on Nov. 16, 2017, 8 pages.
- Matias Garraz, "International Search Report and Written Opinion issued in International Application No. PCT/ US2017/044603", mailed on Nov. 8, 2017, 12 pages.
- McCoy, "U.S. Office Action issued in co-pending U.S. Appl. No. 15/447,083, filed Jun. 22, 2018", mailed on Jun. 22, 2018, 17 pages.
- McCoy, "U.S. Office Action issued in co-pending U.S. Appl. No. 15/447,083, filed Mar. 1, 2017", mailed on Apr. 23, 2019, 16 pages.
- McCoy, "U.S. Office Action issued in co-pending U.S. Appl. No. 15/447,083, filed Mar. 1, 2017", mailed on Dec. 6, 2017, 14 pages.
- McCoy, "U.S. Office Action issued in co-pending U.S. Appl. No. 15/447,083, filed Mar. 1, 2017", mailed on Nov. 2, 2018, 18 pages.
- Moon, "Korean Office Action issued in Korean Application No. 10-2018-7019321", mailed on Sep. 9, 2019, 8 pages of English Translation and 8 pages of Korean Office Action.
- Nickitas-Etienne, "International Preliminary Report on Patentability issued in International Application No. PCT/ US2015/039275", mailed on Jan. 26, 2017, 9 pages.
- Nickitas-Etienne, "International Preliminary Report on Patentability issued in International Application No. PCT/ US2017/020078", mailed on Sep. 13, 2018, 9 pages.
- Nickitas-Etienne, "International Preliminary Report on Patentability issued in International Application No. PCT/ US2017/020291", mailed on Sep. 13, 2018, 8 pages.
- Nickitas-Etienne, "International Preliminary Report on Patentability issued in International Application No. PCT/ US2017/036883 (GOOG-2640WP)", mailed on Jan. 3, 2019, 7 pages.
- Park, "Korean Office Action issued in Korean Application No. 10-2018-7019869 (Goog- 2635KR)", mailed on May 28, 2019, 7 pages of English Translation and 7 pages of Korean Office Action.
- Park, "Korean Office Action issued in Korean Application No. 10-2018-7023336 (Goog- 2615KR)", mailed on Jul. 23, 2019, 7 pages of English Translation and 7 pages of Korean Office Action.
- Paypal Beacon, <https://www.paypal.com/webapps/mpp/beacon>, Jul. 17, 2014, 6 pages.
- Peuser, "International Search Report and Written Opinion issued in International Application No. PCT/ US2015/039275(GOOG-1970WP)", mailed on Oct. 8, 2015, 11 pages.
- Rao, "Paypal Debuts its Newest Hardward, Beacon, A Bluetooth LE Enabled Device for Hands-Free Check Ins 2 and Payments", TechCrunch, Sep. 9, 2013, 29 pages.
- Raymaekers, "European Office Action issued in European Application No. 15741455.8 (Goog- 1975EP)", mailed on Jan. 8, 2019, 14 pages.
- Raymaekers, "European Office Action issued in European Application No. 15742466.4 (Goog- 1980EP)", mailed on Jan. 22, 2019, 11 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,001, filed Nov. 12, 2014 (GOOG-1971)", mailed on Aug. 4, 2017, 17 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,001, filed Nov. 12, 2014 (GOOG-1971)", mailed on Feb. 27, 2019, 10 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,001 filed on Nov. 12, 2014 (GOOG-1971)", mailed on Jan. 9, 2018, 17 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,001, filed Nov. 12, 2014 (GOOG-1971)", mailed on May 8, 2018, 15 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,004, filed Nov. 12, 2014 (GOOG-1972)", mailed on Dec. 26, 2017, 17 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,004, filed Nov. 12, 2014 (GOOG-1972)", mailed on Jun. 21, 2017, 17 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,004 filed on Nov. 12, 2014 (GOOG-1972)", mailed on Mar. 25, 2019, 8 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,004 filed on Nov. 12, 2014 (GOOG-1972)", mailed on May 3, 2018, 15 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,009, filed Nov. 12, 2014 (GOOG-1973)", mailed on Jan. 9, 2018, 16 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,009, filed Nov. 12, 2014 (GOOG-1973)", mailed on Sep. 7, 2017, 15 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,031, filed Nov. 12, 2014 (GOOG-1975)", mailed on Jun. 13, 2018, 19 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,031 filed on Nov. 12, 2014 (GOOG-1975)", mailed on Nov. 24, 2017, 19 pages.
- Raza, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 14/540,031, filed Nov. 12, 2014 (GOOG-1975)", mailed on Oct. 2, 2018, 17 pages.
- Reichert, "International Search Report and Written Opinion issued in International Application No. PCT/ US2017/020291 (GOOG-2635WP)", mailed on May 9, 2017, 14 pages.
- Shah, "U.S. Office Action issued in co-pending U.S. Application No. U.S. Appl. No. 15/616,895, filed Jun. 7, 2017 (GOOG-2640)", mailed on Aug. 20, 2019, 27 pages.
- Tanaami, "Japanese Office Action issued in Japanese Application No. 2018-531154 (Goog- 2365JP)", mailed on Oct. 21, 2019, 07 pages of English Translation and 06 pages of Japanese Office Action.
- Tang, "International Preliminary Report on Patentability issued in International Application No. PCT/US2017/044603 (GOOG-2645WP)", mailed on Feb. 14, 2019, 8 pages.
- Thomas, "International Search Report and Written Opinion issued in International Application No. PCT/ US2017/020078", mailed on May 25, 2017, 10 pages.
- Toscano Oliveros, "International Search Report and Written Opinion issued in International Application No. PCT/ US2017/020270", mailed on May 9, 2017, 13 pages.
- U.S. Appl. No. 14/539,997 to Chitilian et al, filed Nov. 12, 2014.
- U.S. Appl. No. 14/540,001 to Chitilian et al, filed Nov. 12, 2014.
- U.S. Appl. No. 14/540,004 to Chitilian et a, filed Nov. 12, 2014.
- U.S. Appl. No. 14/540,009 to Chitilian et al, filed Nov. 12, 2014.
- U.S. Appl. No. 14/540,031 to Chitilian et al, filed Nov. 12, 2014.
- U.S. Appl. No. 14/540,034 to Chitilian et al, filed Nov. 12, 2014.
- U.S. Appl. No. 14/540,036 to Chitilian et al, filed Nov. 12, 2014.
- U.S. Appl. No. 14/797,029 to Chandrasekaran et al, filed Jul. 10, 2015.

(56)

**References Cited**

OTHER PUBLICATIONS

U.S. Appl. No. 15/446,734 to Dieter et al, filed Mar. 1, 2017.  
U.S. Appl. No. 15/446,990 to Chandrasekaran et al, filed Mar. 1, 2017.  
U.S. Appl. No. 15/447,083 to Chandrasekaran et al, filed Mar. 1, 2017.  
U.S. Appl. No. 15/492,718 to Chitilian et al, filed Apr. 20, 2017.  
U.S. Appl. No. 15/616,895 to Chandrasekaran et al, filed Jun. 7, 2017.  
U.S. Appl. No. 15/664,640 to Setchell et al, filed Jul. 31, 2017.  
U.S. Appl. No. 16/233,442 to Chitilian et al, filed Dec. 27, 2018.  
U.S. Appl. No. 16/238,492 to Chitilian et al, filed Jan. 2, 2019.  
U.S. Appl. No. 16/407,133 to Chitilian et al, filed May 8, 2019.  
U.S. Appl. No. 16/672,404 to William Setchell filed Nov. 1, 2019.  
U.S. Appl. No. 16/684,903 to Sashikanth Chandrasekaran et al. filed Nov. 15, 2019.

Winter, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/539,997, filed Nov. 12, 2014", mailed on Dec. 31, 2015, 15 pages.

Winter, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/539,997, filed Nov. 12, 2014", mailed on Jun. 17, 2015, 11 pages.

Winter, "U.S. Office Action issued in co-pending U.S. Appl. No. 14/539,997, filed Nov. 12, 2014", mailed on Jun. 30, 2016, 16 pages.

Winter, "U.S. Office Action issued in co-pending U.S. Appl. No. 15/492,718 filed on Apr. 20, 2017", mailed on Nov. 27, 2018, 11 pages.

Winter, "U.S. Office Action issued in co-pending U.S. Appl. No. 15/492,718, filed Apr. 20, 2017", mailed on Jun. 12, 2019, 11 pages.

Wittman-Regis, "International Preliminary Report on Patentability issued in International Application No. PCT/US2015/039836", mailed on Jan. 26, 2017, 8 pages.

\* cited by examiner

100

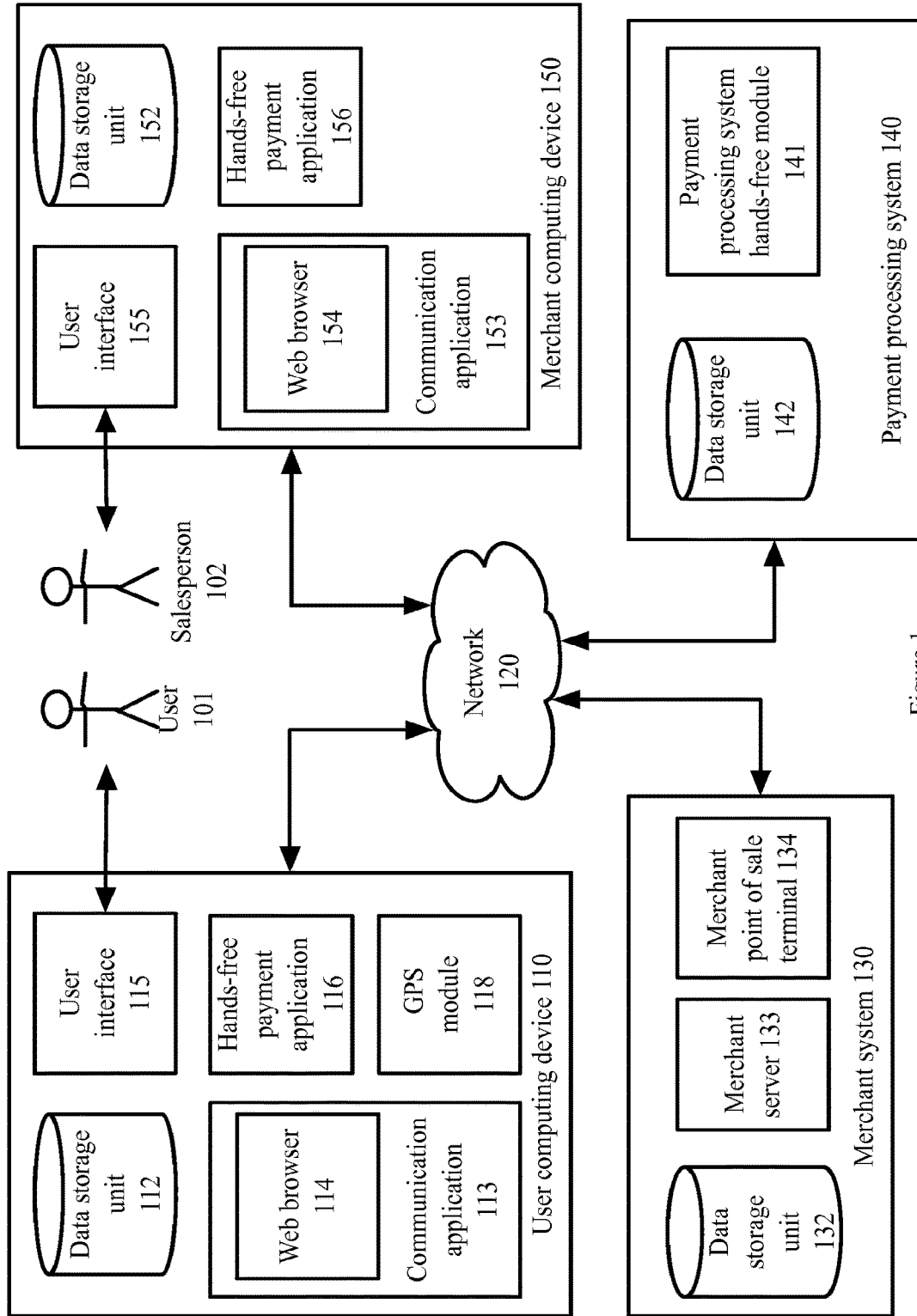


Figure 1

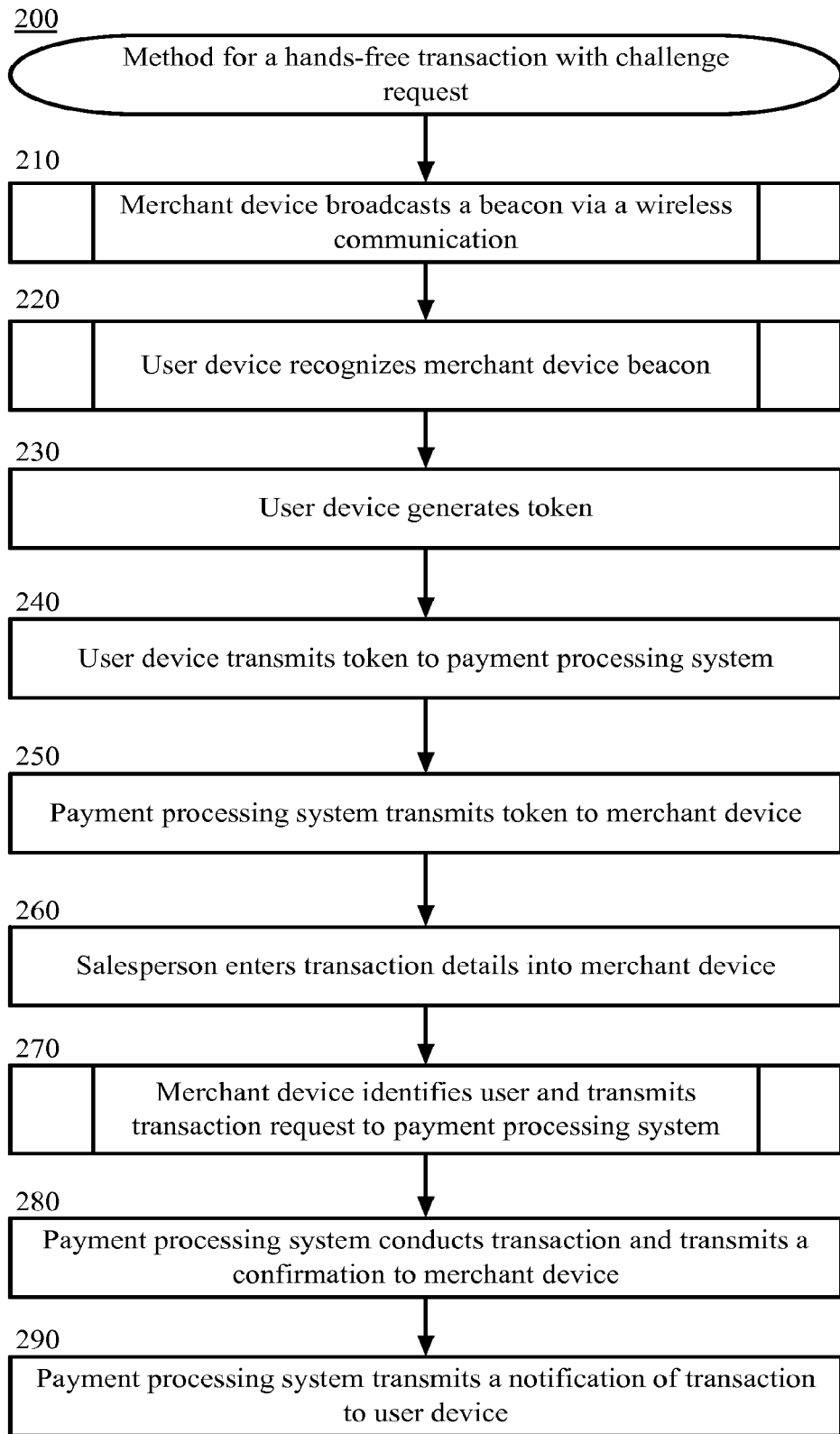


Figure 2

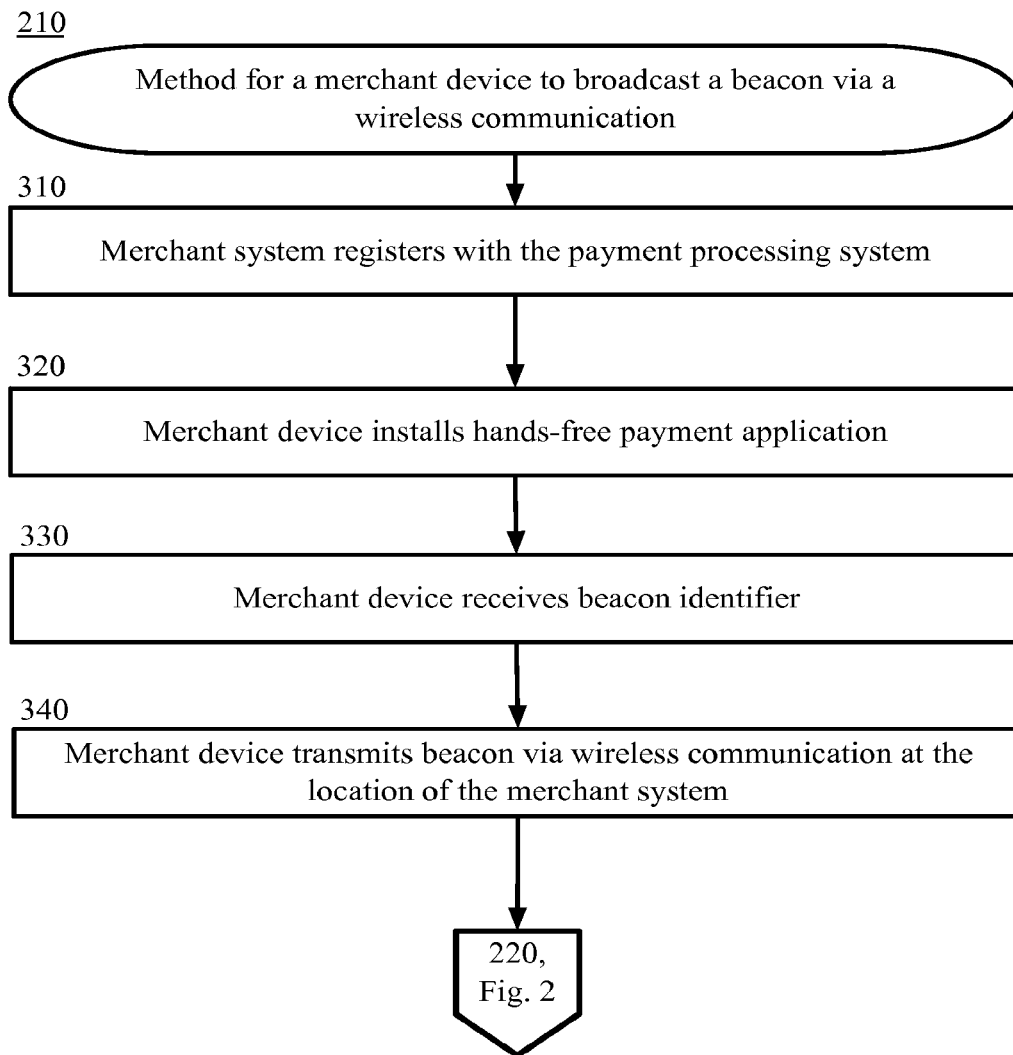


Figure 3



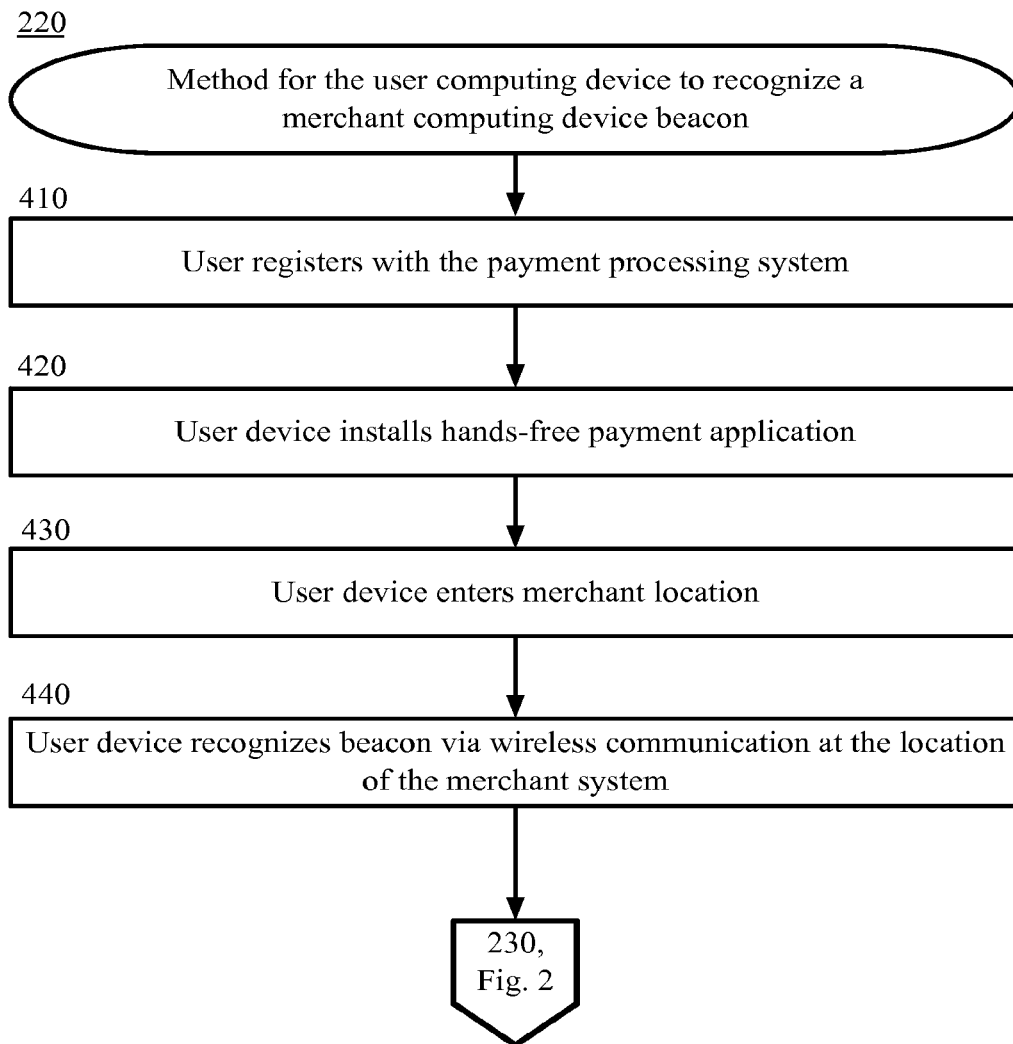


Figure 4

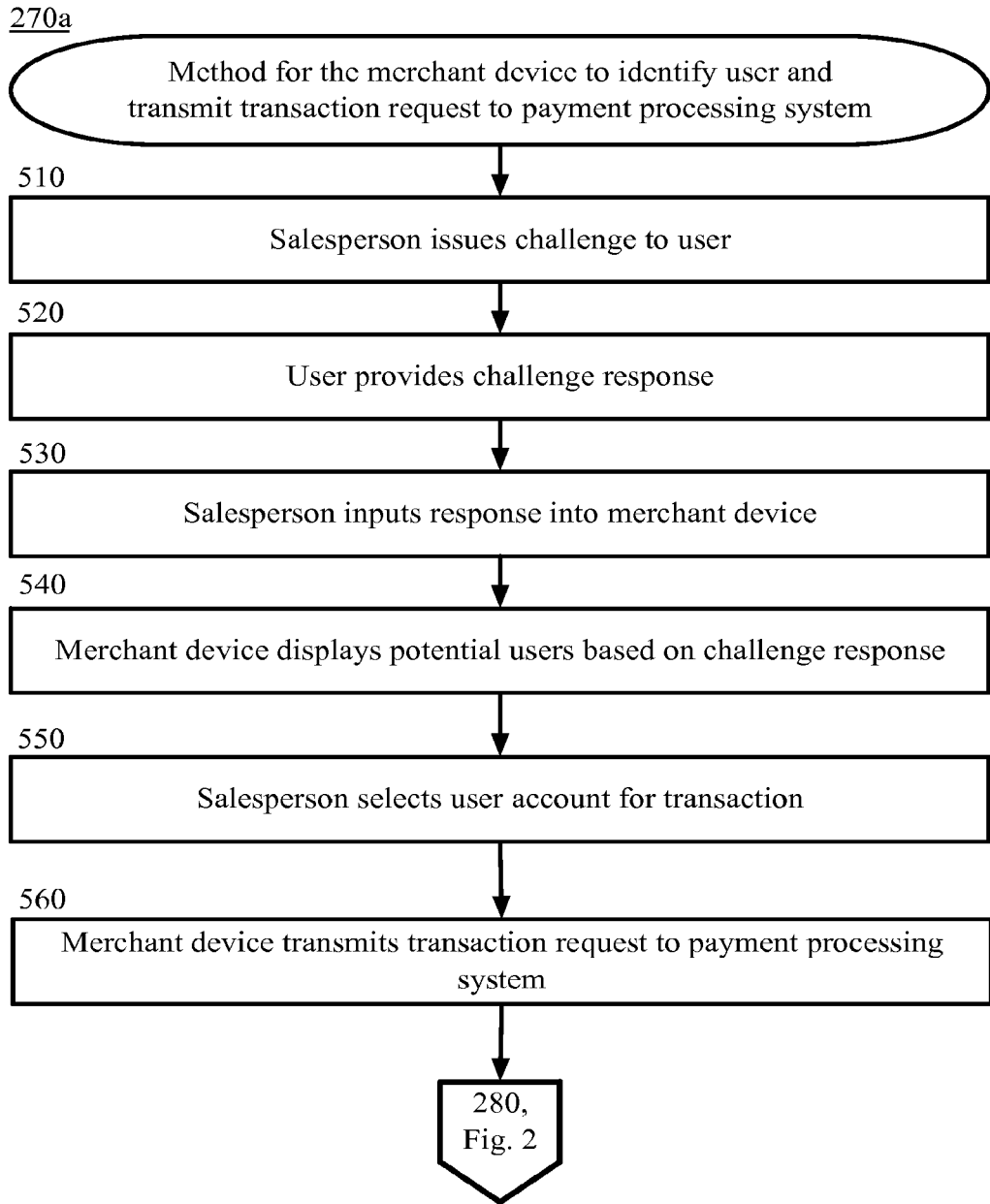


Figure 5

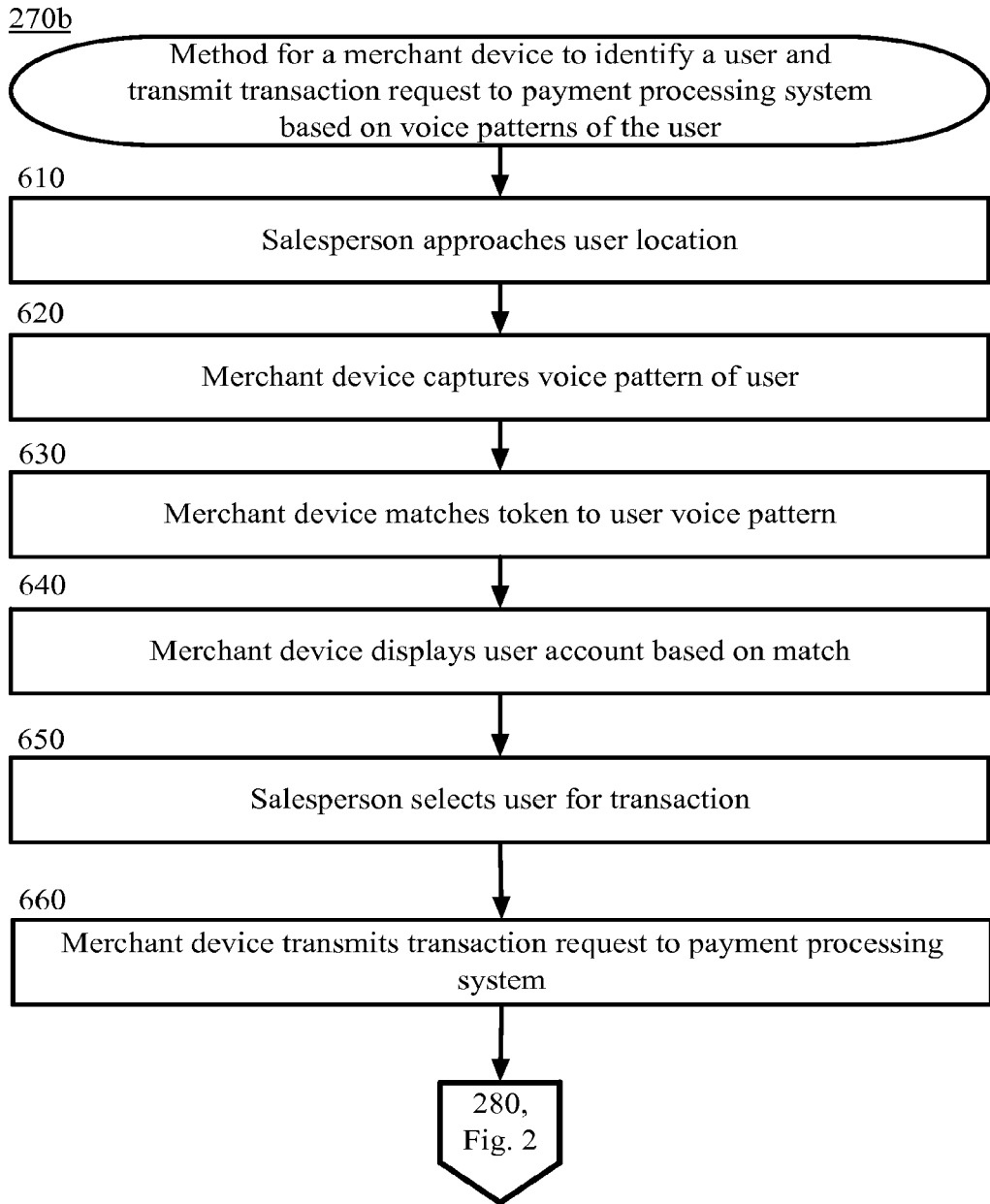


Figure 6

700

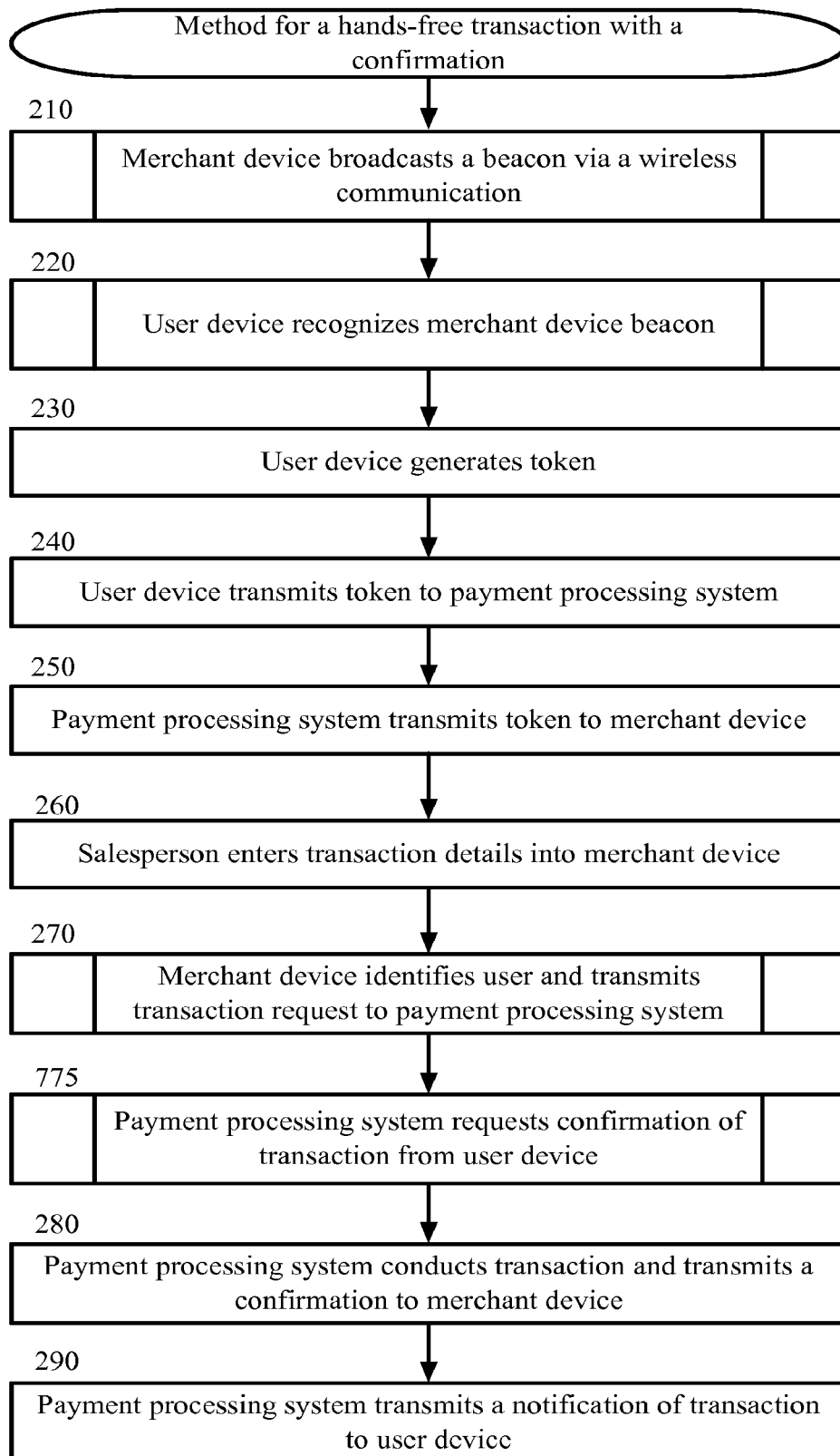


Figure 7

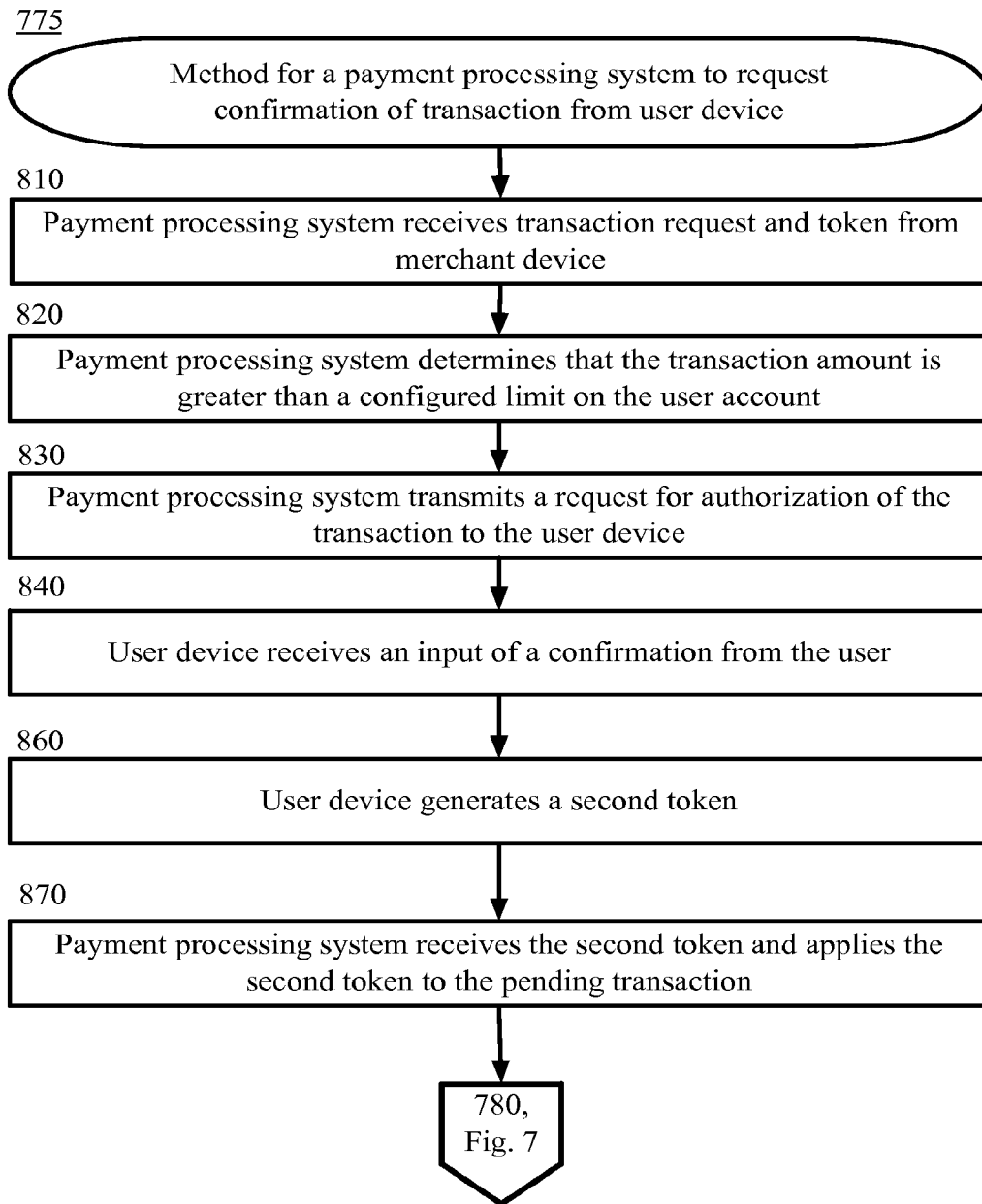


Figure 8

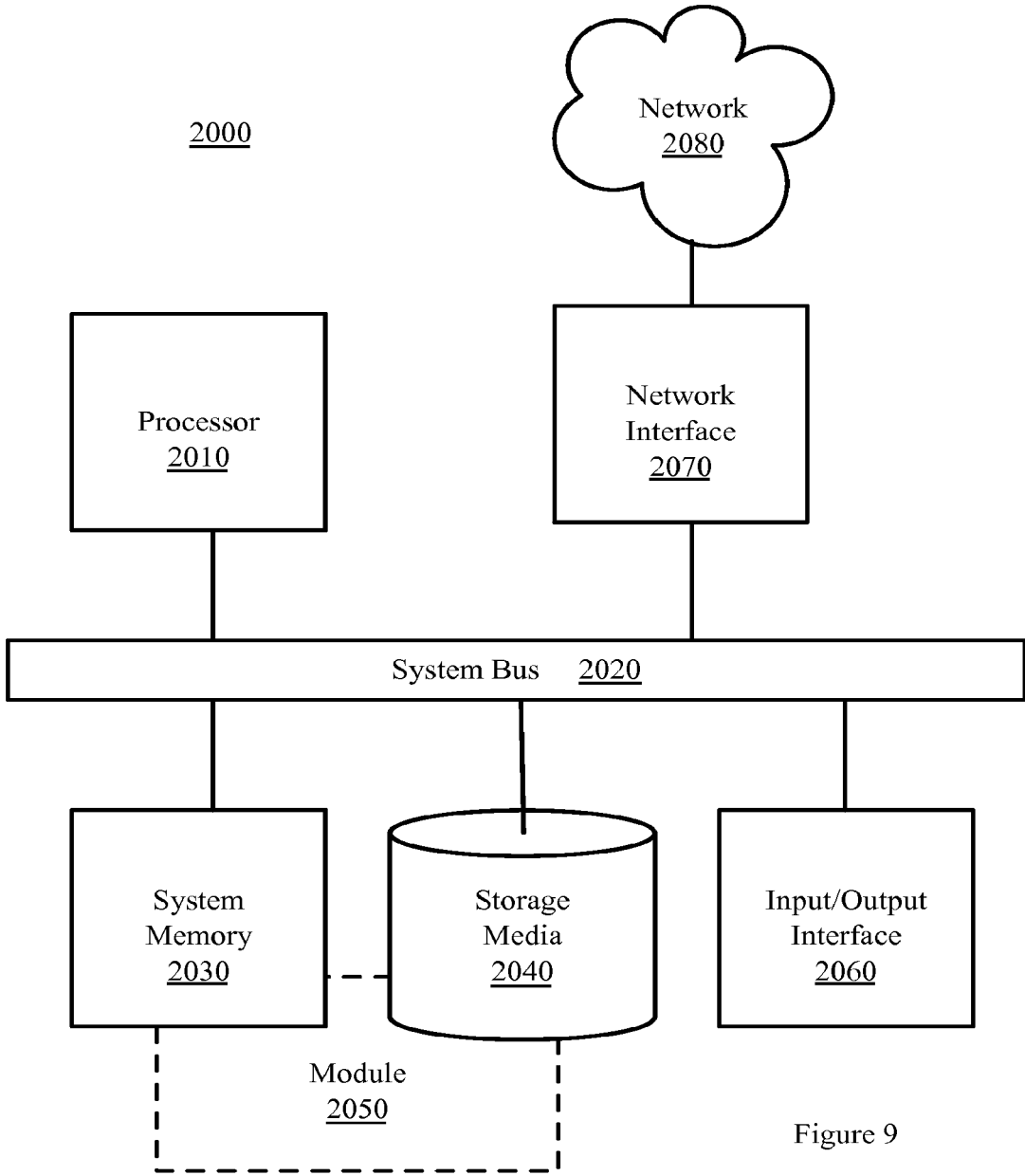


Figure 9

# HANDS-FREE TRANSACTIONS WITH VOICE RECOGNITION

## RELATED APPLICATION

This patent application is a continuation of and claims priority to U.S. patent application Ser. No. 16/428,234 filed May 31, 2019 and entitled "Hands-Free Transactions with Voice Recognition," which is a continuation of and claims priority to U.S. patent application Ser. No. 14/540,036 filed Nov. 12, 2014 and entitled "Hands-Free Transactions with Voice Recognition," which claims priority under 35 U.S.C. § 119 to U.S. Patent Application No. 62/023,752, filed Jul. 11, 2014 and entitled "Hands-Free Transactions with A Challenge Request." The entire contents of the above-identified applications are hereby fully incorporated herein by reference.

## TECHNICAL FIELD

The present disclosure relates to conducting hands-free transactions with a confirmation request, with a challenge and/or response, and with a voice recognition confirmation to allow a user to conduct transactions that are secure and resistant to fraud and including a transaction process that is more efficient for the user and a merchant system.

## BACKGROUND

When consumers make purchases at a merchant location, many methods of conducting a transaction are available. Consumers may use many different payment cards or accounts for purchases, such as gift cards, debit cards, credit cards, stored value cards, and other cards or accounts. The user account identifiers and other data represented by the cards may be communicated to the merchant system via magnetic stripes, near field communication technologies, and other suitable mechanisms.

Conventional payment systems require the consumer to perform actions to provide the user account identifiers and other data to the merchant system. For example, the user may be required to actuate a start button or initiate an application. In another example, the user may be required to tap or swipe a user computing device to initiate a transaction. Other user interactions may be required by conventional payment systems.

## SUMMARY

Techniques herein provide computer-implemented methods to conduct hands-free transactions. In an example embodiment, conducting hands-free transactions comprises a server at a payment processing system, a user computing device, and a merchant computing device. The payment processing system receives a communication from a hands-free payment application on a user computing device, the communication comprising a first transaction token, an identification of a user account, and a beacon identifier received from a merchant computing device associated with the merchant system by the user computing device. The system receives from the merchant computing device a transaction request, the transaction request comprising the first transaction token and transaction data associated with the transaction request. The system determines that the transaction is for an amount greater than a configured transaction limit and communicates a request for an authorization of the transaction. The system receives the autho-

rization of the transaction and conducts the transaction between the user account and the merchant system.

In another example embodiment, the payment processing system receives a communication from a hands-free payment application on a user device, the communication comprising a first transaction token, an identification of a user account, and a beacon identifier. The merchant may provide a challenge to the user and use the response to identify the token and account of the user. The system receives, from the merchant computing device a transaction request, the transaction request comprising the first transaction token identified with the challenge response and transaction data associated with the transaction request. The system conducts the transaction between the user account and the merchant system.

In another example embodiment, a merchant computing device receives a plurality of transaction tokens from a plurality of user computing devices associated with a plurality of user accounts, the user computing devices having received a beacon from the merchant system computing device. The merchant computing device identifies a product for purchase from a particular user and issues a challenge to the user. The merchant computing device receives an input voice response of the user and identifies a voice pattern of the user. The merchant computing device identifies a user account associated with the voice pattern and communicates to a payment processing system a transaction request associated with the particular user account.

In certain other example aspects described herein, systems and computer program products to conduct hands-free transactions are provided.

These and other aspects, objects, features, and advantages of the example embodiments will become apparent to those having ordinary skill in the art upon consideration of the following detailed description of illustrated example embodiments.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram depicting a system for conducting hands-free transactions with challenge request, in accordance with certain example embodiments.

FIG. 2 is a block flow diagram depicting a method for conducting hands-free transactions, in accordance with certain example embodiments.

FIG. 3 is a block flow diagram depicting a method for a merchant device to broadcast a beacon via a wireless communication, in accordance with certain example embodiments.

FIG. 4 is a block flow diagram depicting a method for a user computing device to recognize a merchant computing device beacon, in accordance with certain example embodiments.

FIG. 5 is a block flow diagram depicting a method for a merchant device to identify a user and transmit transaction request to payment processing system, in accordance with certain example embodiments.

FIG. 6 is a block flow diagram depicting a method for a merchant device to identify a user and transmit transaction request to payment processing system based on voice patterns of a user, in accordance with certain example embodiments.

FIG. 7 is a block flow diagram depicting a method for conducting hands-free transactions with a confirmation, in accordance with certain example embodiments.

FIG. 8 is a block flow diagram depicting a method for a payment processing system to request a confirmation of a transaction from a user device, in accordance with certain example embodiments.

FIG. 9 is a block diagram depicting a computing machine and module, in accordance with certain example embodiments.

#### DETAILED DESCRIPTION OF EXAMPLE EMBODIMENTS

##### Overview

The example embodiments described herein provide computer-implemented techniques to conduct hands-free payments. In an example embodiment, a user installs a hands-free application on a user computing device. The user maintains a user account on a payment processing system for conducting transactions. A merchant computing device at a merchant location provides a beacon identifier that is received by the user computing device.

The user computing device generates a token for conducting a transaction and transmits the token to the payment processing system. Upon a verification, the payment processing system transmits the token to the merchant computing device. The merchant computing device stores the token for use in a transaction with the user computing device.

The user approaches the salesperson to conduct a transaction using the hands-free application. The salesperson initiates the transaction on the merchant computing device and offers a challenge to the user for identification of the user account. In an example, the salesperson asks for the initials of the user. The salesperson inputs the response to the challenge in the merchant computing device. One or more user accounts are displayed to the salesperson for selection based on the input of the response. In an example, a picture and a name of each of the one or more users is displayed. The salesperson identifies the user account on a user interface of the merchant computing device from the one or more users displayed.

The merchant computing device transmits the transaction details and the token for the user account to the payment processing system. The payment processing system verifies the details of the transaction and the token, and conducts the transaction. The payment processing system may communicate a notification to the user computing device with the transaction data.

In another example embodiment, when the payment processing system receives the transaction details and the token for the user account from the merchant device, the payment processing system is restricted from conducting the transaction by a configured setting in the user account or in the token. For example, the user account has a configured limit of \$50 for hands-free transactions without a user authorization. If the amount of the pending transaction is over \$50, the payment processing system transmits an authorization request to the user computing device for the transaction.

The user device displays a request to the user to input an authorization or a refusal of the transaction. Upon receiving an input of an acceptance, the user computing device creates a second token comprising the authorization of the transaction. The second token is transmitted to the payment processing system. The payment processing system conducts the transaction using the second token.

In certain example embodiments, instead of a challenge and response, the merchant computing device may use voice recognition software to identify the user. For example, the salesperson may ask the user a question and the merchant

computing device receives the audible response. The merchant computing device compares the voice pattern of the user to a database of voice patterns and identifies the user.

If a strong match exists for any of the stored voice patterns, the hands-free payment application retrieves the user account associated with the matching speaker identification model and conducts the transaction with the user account.

In another example embodiment, the merchant computing device may capture a picture of the user using a camera module on the merchant computing device. The merchant computing device may match the picture against a local database of pictures. The matching of the pictures may take place on the merchant computing device, at the payment processing system, or in any suitable location. In an example, the merchant computing device may access a database of images and match the image of the that has been captured by the merchant computing device. Upon locating a match, the merchant computing device may verify that the user matches the user account being utilized for the transaction. In another example, the merchant computing device may receive an image from the payment processing system or other location in advance of the consumer approaching the merchant terminal device. For example, the image may be obtained at the time that the consumer enters the store.

In another example embodiment, the challenges are presented based on risk signals derived from features such as (1) user's risk profile (2) the risk tolerance of merchant and (3) number of users who have checked in to the store. For example, for a low value transaction, the merchant computing device may utilize a simple challenge, but a more complex challenge for a high value transaction. In another example, if only one user is at the location of the merchant, then a complex challenge may not be needed to identify the user.

By using and relying on the methods and systems described herein, the hands-free application and payment processing system dynamically provide accurate, efficient, secure, and reliable transactions for a user. As such, the systems and methods described herein may be employed to allow the user to conduct a transaction using communications from the user computing device, the merchant computing device, and the payment processing system that are secure and efficient. The user is allowed to conduct hands-free transactions with a confirmation request to allow the user to conduct transactions that are secure and resistant to fraud. The user is allowed to conduct hands-free transactions with a challenge and response to conduct transactions that are secure, efficient, and resistant to fraud. The user is allowed to conduct hands-free transactions with a voice recognition confirmation to conduct transactions that are secure, efficient, and resistant to fraud. The system may use communication between the user computing device and the payment processing system to reduce fraudulent activities by the merchant. Hence, the methods and systems described herein decrease user frustration and permit accurate, secure, efficient, and reliable transactions for a user.

##### Example System Architectures

Turning now to the drawings, in which like numerals indicate like (but not necessarily identical) elements throughout the figures, example embodiments are described in detail.

FIG. 1 is a block diagram depicting a system 100 for conducting hands-free transactions, in accordance with certain example embodiments. As depicted in FIG. 1, the system 100 includes network computing devices 110, 130, 140, and 150 that are configured to communicate with one



another via one or more networks 120. In some embodiments, a user 101 or a salesperson 102 associated with a device must install an application and/or make a feature selection to obtain the benefits of the techniques described herein.

In example embodiments, the network 120 can include a local area network (“LAN”), a wide area network (“WAN”), an intranet, an Internet, storage area network (“SAN”), personal area network (“PAN”), a metropolitan area network (“MAN”), a wireless local area network (“WLAN”), a virtual private network (“VPN”), a cellular or other mobile communication network, Bluetooth, Bluetooth low energy, near field communication (“NFC”), Wi-Fi, or any combination thereof or any other appropriate architecture or system that facilitates the communication of signals, data, and/or messages. Throughout the discussion of example embodiments, it should be understood that the terms “data” and “information” are used interchangeably herein to refer to text, images, audio, video, or any other form of information that can exist in a computer-based environment.

Each network computing system 110, 130, 140, and 150 includes a device having a communication module capable of transmitting and receiving data over the network 120. For example, each network computing device 110, 130, 140, and 150 can include a server, desktop computer, laptop computer, tablet computer, a television with one or more processors embedded therein and/or coupled thereto, smart phone, handheld computer, personal digital assistant (“PDA”), or any other wired or wireless, processor-driven device. In the example embodiment depicted in FIG. 1, the network computing devices 110, 130, 140, and 150 are operated by users 101, merchant system operators, payment processing system operators, and salespersons 102, respectively.

In the examples provided herein, actions performed by the user 101 may be performed by the salesperson 102 in other embodiments. Examples described as being performed by the user computing device 110 may be performed by the merchant computing device 150 or the payment processing system 140 in other embodiments.

An example user computing device 110 comprises a data storage unit 112, a communication application 113, a web browser 114, a user interface 115, a global positioning system (“GPS”) module 118, and a hands-free payment application 116.

In an example embodiment, the data storage unit 112 comprises a local or remote data storage structure accessible to the user computing device 110 suitable for storing information. In an example embodiment, the data storage unit 112 stores encrypted information, such as HTML5 local storage.

In an example embodiment, the user 101 uses a communication application 113, such as a web browser 114 application or a stand-alone hands-free payment application 116, to view, download, upload, or otherwise access documents or web pages via a distributed network 120.

In an example embodiment, the communication application 113 can interact with web servers or other computing devices connected to the network 120, including the user computing device 110, a point of sale (“POS”) terminal 134 associated with a merchant system 130 and/or a web server (not depicted) associated with a payment processing system 140.

In an example embodiment, the web browser 114 can enable the user 101 to interact with web pages using the user computing device 110.

In an example embodiment, the user interface 115 enables the user 101 to interact with the hands-free payment application 116 and/or web browser 114. For example, the user interface 115 may be a touch screen, a voice-based interface, or any other interface that allows the user 101 to provide input and receive output from an application or module on the user computing device 110. In an example embodiment, the user 101 interacts via the user interface 115 with the hands-free payment application 116 and/or web browser 114 to configure user accounts on a payment processing system hands-free module 141. In another example embodiment, the user 101 interacts via the user interface 115 with the hands-free payment application 116 and/or the web browser 114 to enable hands-free payments, if needed.

In an example embodiment, the GPS module 118 communicates with one or more satellites of the Global Positioning System (“GPS”) or other satellite-based location system to determine the location of the user computing device 110. In an example embodiment, the delivery system 140 periodically or continuously communicates with the GPS module 118 during applicable time periods to determine and log the location of the user computing device 110. In another embodiment, the location of the user computing device 110 is identified based on Wi-Fi signals, cellular location, or any suitable location identifying technology. Any location determining hardware, software, or combination of hardware and software is represented by the GPS module 118.

In an example embodiment, the hands-free payment application 116 is a program, function, routine, applet, or similar entity that exists on and performs its operations on the user computing device 110. In certain example embodiments, the user 101 must install the hands-free payment application 116 and/or make a feature selection on the user computing device 110 to obtain the benefits of the techniques described herein. In an example embodiment, the user 101 may access the hands-free payment application 116 on the user computing device 110 via the user interface 115. In an example embodiment, the hands-free payment application 116 may be associated with the payment processing system 140. In another example embodiment, the application may be associated with the merchant system 130. In yet another example embodiment, two hands-free payment applications 116 exist, one associated with the merchant system 130 and another associated with the payment processing system 140.

In certain example embodiments, one or more functions herein described as performed by the hands-free payment application 116 may also be performed by a web browser 114 application, for example, a web browser 114 application associated with a merchant system website 134 or associated with the payment processing system 140. In certain example embodiments, one or more functions herein described as performed by the hands-free payment application 116 may also be performed by the user computing device operating system. In certain example embodiments, one or more functions herein described as performed via the web browser 114 may also be performed via the hands-free payment application 116.

In an example embodiment, the user computing device 110 communicates with the merchant system 130 and the payment processing system 140 via the network 120.

An example merchant system 130 comprises a server 133, POS terminal 134, and a data storage unit 132. In an example embodiment, the merchant system 130 communicates with a payment processing system 140 over the network 120. In example embodiments described herein, the

merchant system **130** is a separate entity from the payment processing system **140**. However, in certain other example embodiments, the merchant system **130** is associated with a payment processing system **140**, is a component of another system along with a payment processing system **140**, comprises a payment processing system **140**, or is a component of a payment processing system **140**.

In an example embodiment, the data storage unit **132** comprises a local or remote data storage structure accessible to the merchant system **130** suitable for storing information. In an example embodiment, the data storage unit **132** stores encrypted information, such as HTML5 local storage.

In an example embodiment, the web server **133** provides content accessible by the user **101** through the web browser **114** and/or hands-free payment application **116** on the user computing device **110**, including but not limited to html documents, images, style sheets, and scripts. In an example embodiment, the server **133** supports the merchant system website **134**.

In an example embodiment, the POS terminal **134** comprises a computing device that is configured to accept payments from users **101**, from user computing devices **110**, or other parties. The POS terminal **134** may communicate, via the network, with the user computing device **110**, the merchant server **133**, the merchant computing device **150**, the payment processing system **140**, or any suitable device or system. The POS terminal **134** may comprise a barcode scanner, a user interface, a customer display, or any suitable elements to enable the salesperson **102** to initiate and conduct a transaction. The POS terminal **134** in the example embodiments may comprise a function enabling the salesperson **102** to input an indication that the transaction was conducted with the hands-free application **156** on the merchant computing device **150**, and that the POS terminal **134** should consider the transaction completed.

An example payment processing system **140** comprises a payment processing system hands-free module **141** and a data storage unit **142**. In an example embodiment, the user **101** has a user account with the payment processing system **140**. In an example embodiment, the payment processing system hands-free module **141** manages the user account. For example, the payment processing system hands-free module **141** may receive a user's username and password and allow the user **101** to access services provided by the payment processing system **140**. In an example embodiment, the payment processing system hands-free module **141** communicates with the hands-free payment application **116** resident on the user computing device **110**. In another example embodiment, the payment processing system hands-free module **141** communicates with the user **101** via the user computing device web browser **114**. In an example embodiment, the payment processing system hands-free module **141** manages the user's digital wallet account.

In an example embodiment, the payment processing system hands-free module **141** communicates with the merchant system **130**, account issuer systems (not depicted) and/or acquirers (not depicted), or other suitable financial systems (not depicted) to process payments. In an example embodiment, the payment processing system hands-free module **141** retrieves user financial account information and credit account information from other financial institutions, from the data storage unit **142**, or by communicating with the hands-free payment application **116** over the network **120**. In an example embodiment, the payment processing system hands-free module **141** requests a credit authorization from an issuer system through an acquirer system and receives the credit authorization. In an example embodi-

ment, the payment processing system hands-free module **141** initiates a bank transfer with a financial institution system. In an example embodiment, the payment processing system hands-free module **141** receives the bank transfer or completes a credit card transaction associated with the credit card authorization.

In certain example embodiments, the payment processing system hands-free module **141** creates tokens, verifies tokens, verifies rescue codes, and performs other actions as described herein. In an example embodiment, the payment processing system hands-free module **141** generates a receipt of a transaction and transmits the receipt to the user computing device **110**.

In an example embodiment, the data storage unit **142** comprises any local or remote data storage structure accessible to the payment processing system hands-free module **141** suitable for storing information. In an example embodiment, the data storage unit **142** stores encrypted information, such as HTML5 local storage. In an example embodiment, the data storage unit **142** stores user financial account information and/or user credit account information.

An example merchant computing device **150** comprises a data storage unit **152**, a communication application **153**, a web browser **154**, a user interface **155**, and a hands-free payment application **156**.

In an example embodiment, the data storage unit **152** comprises a local or remote data storage structure accessible to the merchant computing device **150** suitable for storing information. In an example embodiment, the data storage unit **152** stores encrypted information, such as HTML5 local storage.

In an example embodiment, the salesperson **102** uses a communication application **153**, such as a web browser **154** application or a stand-alone hands-free payment application **116**, to view, download, upload, or otherwise access documents or web pages via a distributed network **120**.

In an example embodiment, the communication application **153** can interact with web servers or other computing devices connected to the network **120**, including the merchant POS terminal **134**, a web server **133** associated with a merchant system **130** and/or a payment processing system hands-free module **141**.

In an example embodiment, the web browser **154** can enable the salesperson **102** to interact with web pages using the merchant computing device **150**. In an example embodiment, the salesperson **102** is able to access transaction information from the POS terminal **134**, and access user account information from the user computing device **110** and/or the payment processing system hands-free module **141**.

In an example embodiment, the user interface **155** enables the salesperson **102** to interact with the hands-free payment application **156** and/or web browser **154**. For example, the user interface **155** may be a touch screen, a voice-based interface or any other interface that allows the salesperson **102** to provide input and receive output from an application or module on the merchant computing device **150**. In an example embodiment, the salesperson **102** interacts via the user interface **155** with the hands-free payment application **156** and/or web browser **154** to access a user token to conduct a transaction via the payment processing system **140**.

In an example embodiment, the hands-free payment application **156** is a program, function, routine, applet, or similar entity that exists on and performs operations on the merchant computing device **150**. In certain example embodiments, the salesperson **102** must install the hands-

free payment application 156 and/or make a feature selection on the merchant computing device 150 to obtain the benefits of the techniques described herein. In an example embodiment, the salesperson 102 may access the hands-free payment application 156 on the merchant computing device 150 via the user interface 155. In an example embodiment, the hands-free payment application 156 may be associated with the merchant system 130. In another example embodiment, the application may be associated with the payment processing system 140. In yet another example embodiment, there are two applications 156, one associated with the merchant system 130 and another associated with the payment processing system 140.

In certain example embodiments, one or more functions herein described as performed by the hands-free payment application 156 may also be performed by a web browser 154 application, for example, a web browser 154 application associated with a merchant system website 134 or associated with the payment processing system 140. In certain example embodiments, one or more functions herein described as performed by the hands-free payment application 156 may also be performed by the merchant computing device operating system. In certain example embodiments, one or more functions herein described as performed via the web browser 154 may also be performed via the hands-free payment application 156.

In certain alternate example embodiments, the merchant computing device 150 may be part of the merchant system 130. The merchant computing device 150 functions described herein may be performed by the merchant server 133, POS terminal 134, or other merchant device.

It will be appreciated that the network connections shown are example and other means of establishing a communications link between the computers and devices can be used. Moreover, those having ordinary skill in the art having the benefit of the present disclosure will appreciate that the user computing device 110, the merchant system 130, the POS terminal 134, the payment processing system 140, and the merchant computing device 150 illustrated in FIG. 1 can have any of several other suitable computer system configurations. For example, a user computing device 110 embodied as a mobile phone or handheld computer may or may not include all the components described above.

In example embodiments, the network computing devices and any other computing machines associated with the technology presented herein may be any type of computing machine such as, but not limited to, those discussed in more detail with respect to FIG. 9. Furthermore, any modules associated with any of these computing machines, such as modules described herein or any other modules (scripts, web content, software, firmware, or hardware) associated with the technology presented herein may be any of the modules discussed in more detail with respect to FIG. 9. The computing machines discussed herein may communicate with one another as well as other computer machines or communication systems over one or more networks, such as network 120. The network 120 may include any type of data or communications network, including any of the network technology discussed with respect to FIG. 9.

#### EXAMPLE PROCESSES

The example methods illustrated in FIGS. 2-8 are described hereinafter with respect to the components of the example operating environment 100. The example methods of FIGS. 2-8 may also be performed with other systems and in other environments.

FIG. 2 is a block diagram depicting a method 200 for conducting a hands-free transaction, in accordance with certain example embodiments. The method 200 is described with reference to the components illustrated in FIG. 1.

In block 210, the merchant computing device 150 broadcasts a beacon via a wireless communication. Block 210 is described in greater detail hereinafter with reference to the method 210 described in FIG. 3.

FIG. 3 is a block diagram depicting a method 210 for a merchant computing device 150 to broadcast a beacon via a wireless communication, in accordance with certain example embodiments. The method 210 is described with reference to the components illustrated in FIG. 1.

In block 310, the merchant system 130 registers with the payment processing system 140. For example, the merchant system 130 may contact the payment processing system 140 to become associated with the hands-free transaction process. The merchant system 130 may obtain a merchant account, receive the appropriate applications and software, request authorization to participate, or perform any action required by the payment processing system 140.

The merchant system 130 may use the merchant computing device 150, the point of sale ("POS") terminal 134, the merchant server 133, or any suitable computing device to request and configure a merchant account. The merchant account may allow the merchant system 130 to participate in some or all of the activities described in the methods herein.

In block 320, the merchant computing device 150 installs a hands-free payment application 156. In an example, the merchant computing device 150 is registered as an authorized agent of the merchant system 130. The merchant computing device 150 may be identified by an alphanumeric identifier, by a provided password, a serial number, or by any suitable manner.

In an example, the merchant computing device 150 downloads the hands-free payment application 156 from the payment processing system hands-free module 141 over the network 120. The merchant computing device 150 may download the hands-free payment application 156 from the merchant system server 133. The merchant computing device 150 may obtain the hands-free payment application 156 from any suitable location. The hands-free payment application 156 on the merchant computing device 150 may be integrated into an existing account that is shared with the merchant system server 133, the POS terminal 134, or any suitable computing device or system. A salesperson 102 or another merchant system operator may be required to make a feature selection to obtain the benefits of the techniques described herein.

In block 330, the merchant computing device 150 receives a beacon identifier. For example, the hands-free payment application 156, the merchant computing device 150, the merchant system server 133, or another computing device requests a beacon identifier from the payment processing system 140. The beacon may be any wireless signal emitted by the merchant computing device 150 comprising a beacon identifier, a merchant system 130 identifier, a merchant computing device 150 identifier, or other identifier.

In an example, the beacon identifier is a service set identifier ("SSID"), or other network name or identifier. The beacon identifier may be generated by the payment processing system hands-free module 141, the merchant computing device 150, the merchant server 133, or any suitable computing device. In certain embodiments, the beacon identifier is a unique, but fixed, identifier. That is, a particular beacon identifier may be utilized until changed by the payment

processing system hands-free module **141**, the merchant computing device **150**, the merchant server **133**, or any suitable computing device. In an alternate embodiment, the beacon identifier may be unique, but random. That is, the beacon identifier may be changed randomly, or upon any suitable schedule by the payment processing system hands-free module **141**, the merchant computing device **150**, the merchant server **133**, or any suitable computing device.

The wireless signal emitted by the merchant computing device **150** may be any suitable technology, such as Wi-Fi direct, Bluetooth, low-energy Bluetooth, infrared, or any other suitable technology, and the merchant computing device **150** may include corresponding hardware and software components to emit the beacon via the associated technology.

In block **340**, the merchant computing device **150** transmits the beacon via wireless communication at the location of the merchant system **150**. The merchant computing device **150** may be configured to broadcast the wireless signal at only certain times or locations, or continuously. The merchant computing device **150** may limit or extend the strength of the broadcast beacon, if needed. The beacon is receivable and recognizable by other computing devices that are within range of the wireless signal. The beacon may be transmitted on a single communication technology or on a plurality of communication technologies.

In a certain example embodiment, the beacon identifier is programmed on external communication access points. The merchant hands-free application **156** may be used to configure the external communication access point(s). For example, the merchant hands-free application **156** may utilize functions of the merchant computing device **150** to communicate instructions to the external communication access points. The instructions may include the beacon identifier, the requested communication technology, the time to broadcast, and/or any other suitable instructions. The instructions may be provided by any other suitable computing device.

The external communication access points may be employed to allow a variety of user computing devices **110** to receive the beacon despite differing wireless communication technology capabilities or in various locations in the merchant location. The external communication access points may allow the beacon to be broadcast over a wider area than the merchant computing device **150** alone is capable of broadcasting.

From block **340**, the method **210** proceeds to block **220** of FIG. **2**.

Returning to FIG. **2**, in block **220**, the user computing device **110** recognizes the merchant computing device beacon. Block **220** is described in more detail hereinafter with reference to the method **220** described in FIG. **4**.

FIG. **4** is a block diagram depicting a method **220** for the user computing device **110** to recognize the merchant computing device beacon, in accordance with certain example embodiments. The method **220** is described with reference to the components illustrated in FIG. **1**.

In block **410**, the user **101** registers with the payment processing system **140**. For example, the user **101** may contact the payment processing system **140** to register a user account. The user **101** may obtain a user account number, receive the appropriate applications and software to install on the user computing device **110**, request authorization to participate in the hands-free payment processing, or perform any action required by the payment processing system **140**. The user **101** may utilize the functions of the user computing

device **110**, such as the user interface **115** and the web browser **114**, to register and configure a user account.

In block **420**, the user computing device **140** installs a hands-free payment application **116**. For example, the user computing device **110** downloads the hands-free payment application **116** from the payment processing system hands-free module **141** over the network **120**. The user computing device **110** may obtain the hands-free payment application **116** from any other suitable location. The hands-free payment application **116** on the user computing device **110** may be configured with the user account information, user preferences, or other suitable information. A user **101** may be required to make a feature selection to obtain the benefits of the techniques described herein.

The hands-free payment application **116** may provide options, data, configurable alerts, and other suitable features to the user **101**. For example, the hands-free payment application **116** may comprise a listing of participating merchant systems **130** and merchant locations. The listing may be updated periodically from the payment processing system **140**. The hands-free payment application **116** may notify the user **101** when the user **101** is within a configured vicinity of a participating merchant system **130**. The hands-free payment application **116** may provide the user **102** with options to update payment preferences. The hands-free payment application **116** may provide the user **101** with a listing of recent transactions. The hands-free payment application **116** may provide any other suitable information to the user **101**.

In block **430**, the user computing device **110** enters a location of the merchant system **130**. The user **101** may enter the merchant location carrying the user computing device **101** in a pocket or a bag, in the hands of the user **101**, or in any suitable manner. The location of the merchant system **130** may be a store location, a kiosk location, or any suitable physical location of a merchant system **130**. In an alternate example, a salesperson **102** may be mobile and arrive at a location of the user **101**. For example, the merchant system **130** may be a restaurant and the salesperson **102** may be a delivery person possessing a merchant computing device **150**.

In certain example embodiments, the hands-free payment application **116** alerts the user **101** when the user **101** is in the vicinity of a merchant system **130** that accepts hands-free payments. The alert may be provided via a message on the user computing device **110**, via an email or a text, or in any suitable manner.

The alert may be based on the location of the user **101** as determined by the GPS module **118**. For example, the hands-free payment application **116** accesses the GPS data from the GPS module **118** and compare the GPS location to a list of locations of merchant systems **130** that accept hands-free payments. If a match results from the comparison, then an alert is generated and provided to the user. The match may result if the user **101** is within a configured distance of the merchant system **130**.

The alerts may be configured to alert in any suitable manner. In an example, the alerts may be combined in commercially dense environments or the alerts may be presented individually. In another example, the alerts may be configured to only alert the user **101** a configured number of times. For example, the alert may be presented three times, but upon a fourth instance, the alert is not presented. The alerts may be presented as a notification with an audible alert, a vibration, a popup alert on the user interface **115** of the user computing device **110**, or other suitable alert.

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In block 440, the user computing device 110 recognizes a beacon via wireless communication at the location of the merchant system 130 and approves the merchant system 130. The user computing device 110 may be configured to search for beacons or other wireless signals. Upon entering the range of the signal of the merchant computing device 130, the user computing device 110 receives the beacon. The user computing device 110 interprets the data transmitted in the beacon and recognizes that the beacon is associated with the payment processing system 140 and the hands-free payment application 116. The user computing device 110 may compare the data from the beacon to a database of beacon data to determine an identity of the merchant system 130 associated with the beacon and/or to verify the authenticity of the beacon.

The hands-free payment application 116 interprets the data that is provided in the beacon. For example, the hands-free payment application 116 extracts data from the beacon, such as a beacon identifier, a merchant system name, communication technology requirements, or any other suitable information.

From block 440, the method 220 returns to block 230 of FIG. 2.

Returning to FIG. 2, in block 230, the user computing device 110 generates a token for a potential transaction. The token may be any data associated with the user account that is generated by the user computing device 110 for secure transmission to another computing device. The token may represent an authorization or acknowledgement by the user computing device 110 that the user computing device 110 is in communication with a merchant computing device 110 and that a transaction may be forthcoming. The token may comprise a user account identifier, the beacon identifier, a user computing device 110 identifier, or any suitable data. The token may be encrypted or otherwise configured to only be readable by one or more of the payment processing system hands-free module 141, the user computing device 110, a financial account server associated with the payment processing system 140, or any suitable computing system. In certain example embodiments herein, the token, or certain portions of the token, is not readable by the merchant computing device 150. To generate the token, the user computing device 110 may compile all of the data needed for the token into a data file and insert identifiers, labels, or other items to prepare the token for transmission. The token may be generated in response to receiving the beacon from the merchant computing device 150. That is, the token is not generated until the user computing device 110 recognizes the beacon and recognizes a need to transmit the token based on the identify of the merchant system 130, the location of the user computing device 110, or any other factors. In an alternate embodiment, the token is created in advance. The token, or a series of tokens, may be created and stored on the data storage unit 112 of the user computing device 110. The token may be accessed from the storage location and utilized when requested by the hands-free payment application 116.

The token may provide a time that the token will expire. For example, the token may only be usable for one hour after being generated. In the example, after one hour has elapsed, the token is no longer valid for use and the payment processing system 140 will reject any transaction request including an expired token. In certain example embodiments, the token comprises the beacon identifier, the location of the user computing device 110, the user account identifier, or any other suitable data.

The token may be generated by the hands-free application 116, or another function of the user computing device 110.

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For example, an application operating on a secure element of the user computing device 110 may generate the token.

In certain embodiments, a token is not generated by the user computing device 110. For example, the payment processing system 140 may generate the token. The payment processing system 140 may receive, from the user computing device 110, a set of authentication data for the user account and generate a token. The authentication data may comprise user 101 data, account data, passwords, user computing device 110 data, or any suitable data that may be used to authenticate the user account. The authentication data may be transmitted to the payment processing system 140 when the user computing device 110 receives the beacon from the merchant computing device 150. The user computing device 110 may access the authentication data from a database on the data storage unit 112, or from data stored in the hands-free payment application 116. The authentication data is transmitted in a similar fashion as the description of the transmission of the token from the user computing device 110 to the payment processing system 140. The token that is generated by the payment processing system 140 is transmitted back to the user computing device 110 or to the merchant computing device 150 on behalf of the user computing device 110.

In block 240, the user computing device 110 transmits the token to the payment processing system hands-free module 141. The user computing device 110 may transmit a new token at the time that the user computing device 110 recognizes the beacon and the beacon identifier, at a time that a previous token has expired, or upon any suitable schedule. The user computing device 110 may transmit the token via an Internet communication over the network 120, Bluetooth communication, Wi-Fi communication, cellular connection, or via any suitable communication protocol.

The payment processing system hands-free module 141 approves the token and transaction parameters. The payment processing system hands-free module 141 receives the token and any associated information from the user computing device 110 and determines if the beacon identifier can be verified.

For example, the payment processing system hands-free module 141 may compare the beacon identifier to a database to determine if the beacon identifier is registered and approved. The payment processing system hands-free module 141 may compare a location of the user computing device 110, as determined by the global positioning system ("GPS") module 118, to a database of locations associated with the beacon identifiers. If not provided already, the payment processing system hands-free module 141 may request the GPS location of the user computing device 110 in a communication over the network 120 and receive a response from the user computing device 110. If the location of the user computing device 110 matches the expected location of the merchant computing device 150, then the token is verified. Any other suitable criteria for verifying the token may be employed.

The payment processing system hands-free module 141 may verify the user account on the payment processing system 140 to determine if the user account is active and available for transactions. For example, the payment processing system may access the user account and determine if the account has funds available for use as stored value funds, or if the account has a valid credit or debit account associated with the account with which to conduct transaction.

In block 250, the payment processing system hands-free module 141 transmits the token to a merchant computing

device 150. If the token is verified, the payment processing system hands-free module 141 communicates the token to the merchant computing device 150 to allow a hand-free transaction to be conducted. The token provides the merchant computing device 150 with the authorization to initiate a transaction on behalf of the user account.

In an alternate embodiment, the user computing device 110 provides the token directly to the merchant computing device 150. For example, the user computing device 110 generates the token as described in block 230 and transmits the token to the merchant computing device 150 instead of to the payment processing system 140. In a certain embodiment, the user computing device 110 may require approval from the payment processing device 140 before transmitting the token to the merchant computing device 150.

Alternatively, the user computing device 110 may transmit authorization data to the payment processing system. The authentication data may comprise user 101 data, account data, passwords, user computing device 110 data, or any suitable data that may be used to authenticate the user account. The authentication data may be transmitted to the payment processing system 140 when the user computing device 110 receives the beacon from the merchant computing device 150. The user computing device 110 may access the authentication data from a database on the data storage unit 112, or from data stored in the hands-free payment application 116. The authentication data is transmitted in a similar fashion as the description of the transmission of the token from the user computing device 110 to the payment processing system 140. The token is generated by the payment processing system 140 and is transmitted back to the user computing device 110. The user computing device 110 then transmits the received token to the merchant computing device 150.

In block 260, the salesperson 102 enters transaction details into the merchant computing device 150. In an example, the user 101 selects a product for purchase at the location of the merchant system 130. The term "product" includes tangible and intangible products, as well as services. The salesperson 102 scans the product with a barcode scanner or in any suitable manner enters the product details into the merchant computing device 150. The transaction data may include the product identification, the product price, or any other suitable information.

In block 270, the merchant computing device 150 identifies the user 101 and transmits a transaction request to the payment processing system 140. Block 270 is described in more detail hereinafter with reference to the method 270a as described in FIG. 5 and the method 270b as described in FIG. 6.

FIG. 5 is a block diagram depicting a method 270a for the merchant computing device 150 to identify the user 101 and to transmit the transaction request to the payment processing system 140. The method 270a is described with reference to the components illustrated in FIG. 1.

In block 510, the salesperson 102 issues a challenge to the user 101. In an example, the salesperson 102 asks the user 101 for the initials of the user 101. In another example, the salesperson 102 asks the user 101 for the last four digits of the phone number of the user 101. In another example, the salesperson 102 asks the user 101 for a configured password. Any suitable challenge may be issued by the salesperson 102. In an example embodiment, the response to the challenge does not provide any secure or private information.

In block 520, the user 101 provides the challenge response to the salesperson 102. As described in the example challenges, the responses may be the initials of the user 101, the

last four digits of the phone number of the user 101, or a configured password. Any configured challenge response may be utilized. In certain embodiments, the response may be a spoken response, a hand gesture, a keypad entry, a display of an identification card, or any suitable response.

In block 530, the salesperson 102 inputs the challenge response of the user 101. In an example, if the user 101 indicates that the initials of the user 101 are "AC," then the salesperson 102 inputs "AC" into the hands-free payment application 156 of the merchant computing device 150. In an example, the user interface 115 of the hands-free payment application 156 or the merchant computing device 150 displays a request for an entry of the response of the user 101. The salesperson 102 enters the response via a virtual or physical keyboard, voice dictation, or in any suitable manner. In an alternate example, the user 101 enters the response into the user interface 115 of the hands-free payment application 156 or the merchant computing device 150.

In block 540, the merchant computing device 150 displays potential users based on the challenge response. A list of users 101 that are associated with the challenge response are displayed on the merchant computing device 150 to the salesperson 102. For example, if ten customers are in the vicinity of the merchant computing device 150, then the merchant computing device 150 may have received ten pending tokens from the payment processing system 140 associated with the ten customers. When the hands-free payment application 156 on the merchant computing device 150 receives the challenge response input, only the potential users that are associated with the challenge response are displayed to the salesperson 102.

In another embodiment, the merchant computing device 150 or the payment processing system 140 which processes the challenge, presents additional challenges until there is a single matching user 101 remaining.

In the example, if the salesperson 102 inputs "AC" as the initials of the user 101 associated with the transaction, then only the potential users with those initials will be displayed to the salesperson 102 by the hands-free payment application 156. The hands-free payment application 156 accesses a database on the merchant computing device 150, the payment processing system 140, or another computing device and identifies the initials of the potential users that have provided tokens. The hands-free payment application 156 identifies the one or more potential users that have the initials "AC" and displays the identified user accounts to the salesperson 102. In the example, two of the ten customers that are in the vicinity of the merchant computing device 150 have the initials "AC." The user accounts of the two customers are displayed to the salesperson 102.

In certain example embodiments, all of the nearby customers who have had tokens transmitted to the merchant computing device 150 are presented to the salesperson 102 and the salesperson selects the appropriate user account.

The hands-free payment application 156 may display a picture of the potential user accounts that are presented to the salesperson 102. For example, each user 101 may associate a picture with a user account. When the merchant computing device 150 presents the one or more potential user accounts to the salesperson 102, the salesperson 102 may select the appropriate user account based on the picture matching the user 101 conducting the transaction. Other identifying information may be presented instead of, or in addition to, a picture. For example, the name of the user may be displayed and the salesperson 102 may identify the potential user with that name. Any other suitable identifying information may be presented.

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In an example embodiment, the picture or other identifying information may be transmitted to the merchant computing device 150 as a function of the token. In another example, if the picture or other identifying information is not supplied with the token, the identifying information is requested by the merchant computing device 150 from the payment processing system 140 and received in a communication over the network 120. In another example, the identifying information is requested by the merchant computing device 150 from the user computing device 110 directly and received in a communication. The identifying information may be received from any suitable source.

In block 550, the salesperson 102 selects the user account for the transaction. After identifying the displayed picture of the user 101, the salesperson 102 may input a selection of the user 101 by actuating a user interface control associated with the picture, or by inputting the selection in any suitable manner. If the picture doesn't match any of the potential users, then the salesperson 102 may cancel the transaction, notify the user 101 of the discrepancy, or perform any other suitable action.

In an example, only a single user account is presented in the list of potential users. If only a single user account is identified, then the method may proceed after the salesperson 102 verifies that the displayed picture matches the user 101. If the picture doesn't match, then the salesperson 102 may cancel the transaction, notify the user 101 of the discrepancy, or perform any other suitable action.

In block 560, the merchant computing device 150 transmits the transaction request to the payment processing system 140. The salesperson 102 associates the token that is associated with the user 101 and the selected user account with the transaction data for the product being purchased by the user 101. The salesperson 102 provides an indication on the user interface 155 of the merchant computing device 150 that the user 101 has agreed to the purchase transaction. The merchant computing device 150 transmits the transaction details and token associated with the user 101 to payment processing system hands-free module 141 to conduct the transaction.

From block 560, the method 270a returns to block 280 of FIG. 2.

FIG. 6 is a block flow diagram depicting a method 270b for a merchant computing device 150 to identify a user 101 and transmit transaction request to payment processing system based on voice patterns of the user 101, in accordance with certain example embodiments.

In block 610, the salesperson 102 approaches the user location. The salesperson 102 may recognize that the user 101 is prepared to make a purchase. The salesperson 102 may proceed to an area in the vicinity of the user 101. For example, the salesperson 102 may proceed to an area from which the merchant computing device 150 may detect the voice of the user 101. In another example, the user 101 approaches the area of the salesperson 102, such as at a POS terminal 134 location.

In block 620, the merchant computing device 150 captures a voice pattern of the user 101. In certain embodiments, the user 101 must enable this feature in the user account of the payment processing system 140. In the example, the voice of the user 101 may not be captured or analyzed without the permission of the user 101.

In an example, the salesperson 102 may ask the user 101 a question and the merchant computing device 150 receives the audible response. In another example, the merchant computing device 150 may detect the user 101 speaking without a request from the salesperson 102. For example, the

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user 101 may approach the salesperson 102 to request assistance with a purchase, and the merchant computing device 150 detects the request. In another example, the merchant computing device 150 detects the user 101 speaking for any other suitable reason.

The merchant computing device 150 stores the voice of the user 101 in a storage device, such as the data storage unit 152, or transmits the voice of the user 101 to a third party for analysis and storage. In another example, the merchant computing device 150 transmits the voice of the user 101 to the payment processing system 140 to match with users 101 that are in the vicinity of the merchant computing device 150.

In block 630, the merchant computing device 150 matches the token to the user voice pattern. The merchant computing device 150 performs an analysis of voice of the user 101 and identifies a voice pattern. The merchant computing device 150 compares the voice pattern of the user 101 to a database of voice patterns and identifies the user 101 and the associated user account. The merchant computing device 150 associates the token associated with the user account with the pending transaction.

In an alternate embodiment, the voice pattern of the user 101 is associated with the token of the user 101 that is transmitted to the payment processing system hands-free module 141. The voice pattern is transmitted to the merchant computing device along with the token.

In an example, when user 101 is checking out, the user 101 makes a statement, such as "I'd like to pay with the hands-free payment application." The hands-free payment application 156 on the merchant computing device 150 detects the spoken phrase via the microphone or other input of the merchant computing device 150. The spoken phrase is then compared, on the hands-free payment application 150, with each of the stored voice pattern for one or more nearby consumers that have contributed tokens.

In another example, the user 101 responds to a challenge from the salesperson 102. For example, the salesperson 102 may ask for the initials, first name, phone number, or any other response from the 101. In another example, a certain phrase is required from the user 101 to ensure a proper voice pattern match. For example, the certain phrase may be "I'm paying hands-free."

If a strong match exists for any of the voice patterns, the hands-free payment application 156 retrieves the user account associated with the matching voice pattern, and retrieves the remaining information about the user 101.

In block 640, the merchant computing device 150 displays the user account based on the matching voice pattern. After matching the voice pattern to a user account, the merchant computing device 150 presents the user account and any associated information to the salesperson 102 via a user interface of the merchant computing device 150. The merchant computing device 150 may access user information, a picture of the user 101, or other suitable data, from the user account on the payment processing system 140 or any other suitable computing device.

In block 650, the salesperson selects the displayed user account for the transaction. After verifying the displayed picture of the user 101, or approving the user account for the transaction in any suitable manner, the salesperson 102 may input a selection of the user 101 by actuating a user interface control associated with the picture, or by inputting the selection in any suitable manner.

In block 660, the merchant computing device 150 transmits the transaction request to the payment processing system 140. The salesperson 102 associates the token that is

associated with the user **101** and the selected user account with the transaction data for the product being purchased by the user **101**. The salesperson **102** may provide an indication on the user interface **155** of the merchant computing device **150** that the user **101** has agreed to the purchase transaction. The merchant computing device **150** transmits the transaction details and token associated with the user **101** to payment processing system hands-free module **141** to conduct the transaction. In a certain embodiment, the merchant computing device **150** may include the challenge and the challenge response in the transaction request.

From block **660**, the method **270b** returns to block **280** of FIG. **2**.

In block **280**, the payment processing system **140** conducts the transaction and transmits a confirmation to the merchant computing device **150**. The payment processing system hands-free module **141** receives the transaction details and the token from the merchant computing device **150** and processes the transaction. The payment processing system hands-free module **141** verifies the token as the same token that was previously received from the user computing device **110** (or generated by the payment processing system hands-free module **141**) and provided to the merchant computing device **150**. If the token is not verified as the same token, then the transaction does not proceed. If the token is not verified, the payment processing system hands-free module **141** may request the correct token from the merchant computing device **150**, decline the transaction, alert a payment processing system hands-free module **141** operator, or perform any suitable action to complete or cancel the transaction.

Upon a verification of the token, the payment processing system hands-free module **141** determines if the user account has the funds available for the transaction. In an example, the payment processing system hands-free module **141** may apply the transaction by deducting the amount of the transaction from a pool of funds stored in the user account. In another example, the payment processing system hands-free module **141** may provide an authorization request to a financial account issuer, such as a credit or debit card, associated with the account. Upon receiving an authorization from the financial account issuer, the payment processing system hands-free module **141** proceeds with the transaction. The user account may be funded by any other suitable source, such as a bank account, a stored value account, a debit card, or any suitable source. The payment processing system hands-free module **141** debits the appropriate account of the user **101** for the amount of the transaction and credits an account of the merchant for the amount of the transaction.

The payment processing system hands-free module **141** provides a notification to the merchant system computing device **150** that the transaction is authorized. The authorization may be presented to the salesperson **102** by the user interface **155** of the merchant computing device **150**. Upon receiving the authorization, the salesperson **102** may provide the product and a receipt to the user **101** or the user computing device **110**. Upon settlement of the transaction, the payment processing system hands-free module **141** provides the funds for the transaction to the merchant system **130**.

In block **290**, upon a successful conducting of the transaction, the payment processing system **140** transmits a notification of the successful completion of the transaction to the user computing device **110**. The notification provides the details of the transaction, such as the transaction amount, the product purchased, and other suitable details. The noti-

fication allows the user **101** an opportunity to quickly dispute the charge. For example, the salesperson **102** or the merchant computing device **150** may have associated the wrong token with the transaction details. In another example, the transaction details were in error and an incorrect amount was deducted from the user account. The user **101** receives the notification on the user computing device **110** and views the transaction details on the user interface **115**. In an alternate example, the user **101** receives the notification from the payment processing system **140** as an email, a text, as a notification on the hands-free payment application, or in any suitable manner. In an alternate embodiment, the notification may be provided by the merchant computing device **150**. For example, the merchant computing device **150** provides a text to the user computing device with the transaction details.

The notifications, receipts, and other transaction data may be stored in a list on a database or other storage system on the user computing device **110**, the hands-free payment application **116**, or any suitable storage location. The notifications, receipts, and other transaction data may be stored in a list on a user account or other location on the payment processing system **140**. The user **101** may access the list to review recent transactions, to seek refunds, or for any suitable reason. In certain examples, the list on the user computing device **110** may synchronize with the list on the payment processing system **140** either automatically or when prompted by the user **101**.

FIG. **7** is a block flow diagram depicting a method **700** for a hands-free transaction with a confirmation, in accordance with certain example embodiments. The method **700** is described with reference to the components illustrated in FIG. **1**.

Block **210** through block **270** are substantially similar to the blocks **210** through **270** described previously with regard to FIG. **2**. In FIG. **7**, the method **700** proceeds from block **270** to block **775**.

In block **775**, the payment processing system **140** requests confirmation of the transaction from user computing device **110**. Block **775** is described in more detail hereinafter with reference to the method **775** described in FIG. **8**.

FIG. **8** is a block diagram depicting a method **775** for a payment processing system **140** to request confirmation of a transaction from the user computing device **110**. The method **775** is described with reference to the components illustrated in FIG. **1**.

In block **810**, the payment processing system hands-free module **141** receives the transaction request and the token from the merchant computing device **150**. The transaction request comprises the transaction amount in addition to other relevant transaction data.

In block **820**, the payment processing system hands-free module **141** determines that the transaction amount is greater than a configured limit on the user account. For example, from the information in the token and the transaction data, the payment processing system hands-free module **141** identifies the user account associated with the transaction. The payment processing system hands-free module **141** compares the transaction amount to any configured transaction amount limit in the user account. In an example, the limit may be \$10, \$50, or \$100. Any suitable limit may be configured.

The amount of the transaction limit may be configured by the user **101**, the payment processing system hands-free module **141**, a financial account issuer associated with the user account, or any suitable party. For example, the user **101** may configure a transaction limit during the account



setup to protect against a fraudulent transaction. In another example, a financial account issuer associated with the user account may communicate a hands-free transaction limit to the payment processing system hands-free module **141** based on the credit history of the user **101** or based any suitable qualifications. In certain embodiments, the transaction limit is obtained by the payment processing system hands-free module **141** from data in the token.

If the transaction amount is greater than the configured limit, then the payment processing system hands-free module **141** recognizes that the transaction requires additional authorization. In certain example embodiments, the user account may be configured to require that all transactions may require an authorization. Any other requirement for a transaction may be placed on the user account. For example, the user **101** may configure the account to specify that all transactions with a particular merchant system **130**, or a group of merchant systems, require user authorization. In another example, the user **101** may configure the account to specify that all transactions for certain products require user authorization.

In block **830**, the payment processing system hands-free module **141** transmits a request for authorization of the transaction to the user computing device **110**. The request may be transmitted via the Internet to the hands-free payment application **116**, transmitted via email or text, or transmitted in any suitable manner. The request for authorization may comprise transaction details sufficient to allow the user **101** to identify the transaction needing approval. The request may include the identity of the merchant system **130**, a description of the product being purchased, an identification number of the product, an amount of funds required to conduct the transaction, a geographic location of the merchant system **130**, or any other suitable data.

In block **840**, the user computing device **110** receives an input of a confirmation from the user **101**. Along with a presentation of the transaction data, the hands-free payment application **116**, or other application employing a user interface **115**, displays a request to the user **101** for an authorization of the transaction. The display may provide a control, or other selectable option for the user **101** to input an option to authorize the transaction or refuse the transaction. If the user **101** authorizes the transaction, the user **101** inputs the selection into the user interface **115** by selecting the appropriate button or other control. In alternate embodiments, the user authorization may be input via a voice control, a swipe or other motion with the user computing device **110**, or via any other suitable action of the user **101**.

If the user **101** does not authorize a request, then the method may end or the user computing device **110** may transmit the refusal of the transaction to the payment processing system hands-free module **141**. If authorized by the user **101**, the user computing device transmits the authorization to the payment processing system **140**.

In block **850**, upon receiving the authorization of the transaction from the user **101**, the user computing device **110** generates a second token. The second token is generated in a similar manner as the generation of the first token as described in block **230** of FIG. **2**. In addition to the previously described data associated with the token, the second token comprises the authorization of the transaction as received from the input of the user **101**. In an alternate embodiment, a second token is not created. In an example, the authorization is provided to the payment processing system via a communication over the network **120**.

In block **860**, the payment processing system hands-free module **141** receives the second token and applies the

second token to the pending transaction. The payment processing system hands-free module **141** discards the original token received from the merchant computing device **150** and applies the second token to the transaction. The payment processing system hands-free module **141** recognizes the authorization from the user **101** in the token and overrides the limit on the user account. The payment processing system hands-free module **141** may be configured not to proceed with a token that does not meet the transaction criteria. A second token that is not bound by a transaction limit lower than the transaction amount may be required.

In an alternate example, the payment processing system hands-free module **141** does not receive the second token to apply to the pending transaction. The user computing device **110** provides an authorization from the user **101** to conduct the transaction and override the transaction limit. The payment processing system hands-free module **141** overrides the transaction limit in the user account and uses the first token for any further processing of the transaction.

From block **860**, the method **775** returns to block **280** of FIG. **7**.

Block **280** and block **290** are substantially similar to the blocks **280** and **290** with respect to FIG. **2**. The token used to conduct the transaction in the embodiment of FIG. **7** is the second generated token. In certain alternate embodiments, upon receiving the confirmation from the user computing device **110** for the transaction, the payment processing system **140** accesses the original token and utilizes the original token for the transaction. In an example, the payment processing system **140** overrides the transaction limit of the original token based on the authorization of the user **101** and conducts the transaction with the original token.

In certain example embodiments, the payment processing system **140** will offer incentives to users **101** to utilize the hands-free payment process. Incentives may be offered to the merchant system **130**, the salesperson **102**, and/or the user **101**.

The incentives may be structured in two groups. The first group is "ongoing earnings" In an example, an ongoing earning type of incentive system is a percentage cash back. In another example, the incentive is a points based loyalty system.

Another group of incentives is "surprise incentives." Surprise incentives are not predictable, nor are surprise incentives the same value every time and they can have an amplifying effect at reinvigorating and delighting a user **101**. Surprise promotions serve the same purpose. An algorithm on the payment processing system hands-free module **141** may have a rules engine for handing out gifts, discounts or promotions based on usage patterns of the user **101** as well as overall health of the network.

Users **101** may not know when a gift or discount is available. The users **101** find out that the payment processing system **140** just picked up the tab after the transaction happens. This creates a delight factor. The system can also be set up to reward repeat/loyal users **101** more aggressively.

In an example, the payment processing system hands-free module **141** may monitor the transaction history of the user account and provide a surprise incentive after a configured number of transactions. For example, the third transaction may be funded by the payment processing system **140** and the user account is not charged. In an example, the third transaction is only billed if the total is under a configured amount. In certain example embodiments the transaction that is funded by the payment processing system **140** is selected based on a random selection. For example, an algorithm may be utilized that randomly selects a transaction

for funding by the payment processing system **140**. In another example, the transaction that is funded by the payment processing system **140** is selected is based on an algorithm that analyzes the transaction history of the user **101** and configures the selection in an appropriate manner. In a certain example embodiment, the payment processing system hands-free module **141** may be configured to offer a user account a 1 in 10 chance of having a pending transaction funded by the payment processing system **140**. Any odds of winning or other selection criteria may be utilized.

In another example, the transaction is not fully funded, but is discounted by a configured percentage. For example, an algorithm may be utilized that randomly selects a percentage that will be funded by the payment processing system **140**.

A level of unpredictability in the surprise rewards or discounts encourages users **101** to more frequently utilize the hands-free payments. Unlike cash back rewards, where users **101** can get complacent over time, users **101** will keep using hands-free payments in the hope of getting rewarded again.

In another example, the percentage that will be funded by the payment processing system **140** is selected is based on an algorithm that analyzes the transaction history of the user **101** and configures the selection in an appropriate manner. Any suitable surprise discount or reward to the user account may be utilized.

In certain example embodiments, the payment processing system **140** may provide surprise rewards to a user account based on the number of transactions conducted. For example, when an user account has a greater number of conducted transactions, the amount or the frequency of the rewards or discounts is increased.

Consumer incentive design parameters gets users **101** over an initial hump and promotes active sign ups. Consumer incentives encourage repeated behavior and build long-term loyalty to the payment processing system **140**. Consumer incentives grow stored value and encourage users **101** to link their bank account and maintain a user account with funds available. Consumer incentives build brand awareness so users **101** think hands-free payments is innovative and want to use it everywhere.

Merchant incentive design parameters contribute to customer loyalty, bring in foot traffic for both new and existing customers, and reduce costs.

Salesperson **102** incentive design parameters cause the salesperson to encourage customers to try hands-free payments and push merchant systems to adopt hands-free payments. Customer service is also improved while using hands-free payments. In an example embodiment, the salesperson **102** may receive a certain percentage, such as 10%, of hands-free orders. The payment processing system **140** may register the salesperson **102** that conducted the hands-free payment transaction based on details transmitted with the transaction details and provide a payment to the salesperson **102** in the form of a check.

#### Other Example Embodiments

FIG. 9 depicts a computing machine **2000** and a module **2050** in accordance with certain example embodiments. The computing machine **2000** may correspond to any of the various computers, servers, mobile devices, embedded systems, or computing systems presented herein. The module **2050** may comprise one or more hardware or software elements configured to facilitate the computing machine **2000** in performing the various methods and processing functions presented herein. The computing machine **2000** may include various internal or attached components such as

a processor **2010**, system bus **2020**, system memory **2030**, storage media **2040**, input/output interface **2060**, and a network interface **2070** for communicating with a network **2080**.

The computing machine **2000** may be implemented as a conventional computer system, an embedded controller, a laptop, a server, a mobile device, a smartphone, a set-top box, a kiosk, a vehicular information system, one more processors associated with a television, a customized machine, any other hardware platform, or any combination or multiplicity thereof. The computing machine **2000** may be a distributed system configured to function using multiple computing machines interconnected via a data network or bus system.

The processor **2010** may be configured to execute code or instructions to perform the operations and functionality described herein, manage request flow and address mappings, and to perform calculations and generate commands. The processor **2010** may be configured to monitor and control the operation of the components in the computing machine **2000**. The processor **2010** may be a general purpose processor, a processor core, a multiprocessor, a reconfigurable processor, a microcontroller, a digital signal processor (“DSP”), an application specific integrated circuit (“ASIC”), a graphics processing unit (“GPU”), a field programmable gate array (“FPGA”), a programmable logic device (“PLD”), a controller, a state machine, gated logic, discrete hardware components, any other processing unit, or any combination or multiplicity thereof. The processor **2010** may be a single processing unit, multiple processing units, a single processing core, multiple processing cores, special purpose processing cores, co-processors, or any combination thereof. According to certain example embodiments, the processor **2010** along with other components of the computing machine **2000** may be a virtualized computing machine executing within one or more other computing machines.

The system memory **2030** may include non-volatile memories such as read-only memory (“ROM”), programable read-only memory (“PROM”), erasable programable read-only memory (“EPROM”), flash memory, or any other device capable of storing program instructions or data with or without applied power. The system memory **2030** may also include volatile memories such as random access memory (“RAM”), static random access memory (“SRAM”), dynamic random access memory (“DRAM”), and synchronous dynamic random access memory (“SDRAM”). Other types of RAM also may be used to implement the system memory **2030**. The system memory **2030** may be implemented using a single memory module or multiple memory modules. While the system memory **2030** is depicted as being part of the computing machine **2000**, one skilled in the art will recognize that the system memory **2030** may be separate from the computing machine **2000** without departing from the scope of the subject technology. It should also be appreciated that the system memory **2030** may include, or operate in conjunction with, a non-volatile storage device such as the storage media **2040**.

The storage media **2040** may include a hard disk, a floppy disk, a compact disc read only memory (“CD-ROM”), a digital versatile disc (“DVD”), a Blu-ray disc, a magnetic tape, a flash memory, other non-volatile memory device, a solid state drive (“SSD”), any magnetic storage device, any optical storage device, any electrical storage device, any semiconductor storage device, any physical-based storage device, any other data storage device, or any combination or multiplicity thereof. The storage media **2040** may store one

or more operating systems, application programs and program modules such as module 2050, data, or any other information. The storage media 2040 may be part of, or connected to, the computing machine 2000. The storage media 2040 may also be part of one or more other computing machines that are in communication with the computing machine 2000 such as servers, database servers, cloud storage, network attached storage, and so forth.

The module 2050 may comprise one or more hardware or software elements configured to facilitate the computing machine 2000 with performing the various methods and processing functions presented herein. The module 2050 may include one or more sequences of instructions stored as software or firmware in association with the system memory 2030, the storage media 2040, or both. The storage media 2040 may therefore represent examples of machine or computer readable media on which instructions or code may be stored for execution by the processor 2010. Machine or computer readable media may generally refer to any medium or media used to provide instructions to the processor 2010. Such machine or computer readable media associated with the module 2050 may comprise a computer software product. It should be appreciated that a computer software product comprising the module 2050 may also be associated with one or more processes or methods for delivering the module 2050 to the computing machine 2000 via the network 2080, any signal-bearing medium, or any other communication or delivery technology. The module 2050 may also comprise hardware circuits or information for configuring hardware circuits such as microcode or configuration information for an FPGA or other PLD.

The input/output (“I/O”) interface 2060 may be configured to couple to one or more external devices, to receive data from the one or more external devices, and to send data to the one or more external devices. Such external devices along with the various internal devices may also be known as peripheral devices. The I/O interface 2060 may include both electrical and physical connections for operably coupling the various peripheral devices to the computing machine 2000 or the processor 2010. The I/O interface 2060 may be configured to communicate data, addresses, and control signals between the peripheral devices, the computing machine 2000, or the processor 2010. The I/O interface 2060 may be configured to implement any standard interface, such as small computer system interface (“SCSI”), serial-attached SCSI (“SAS”), fiber channel, peripheral component interconnect (“PCI”), PCI express (PCIe), serial bus, parallel bus, advanced technology attached (“ATA”), serial ATA (“SATA”), universal serial bus (“USB”), Thunderbolt, FireWire, various video buses, and the like. The I/O interface 2060 may be configured to implement only one interface or bus technology. Alternatively, the I/O interface 2060 may be configured to implement multiple interfaces or bus technologies. The I/O interface 2060 may be configured as part of, all of, or to operate in conjunction with, the system bus 2020. The I/O interface 2060 may include one or more buffers for buffering transmissions between one or more external devices, internal devices, the computing machine 2000, or the processor 2010.

The I/O interface 2060 may couple the computing machine 2000 to various input devices including mice, touch-screens, scanners, electronic digitizers, sensors, receivers, touchpads, trackballs, cameras, microphones, keyboards, any other pointing devices, or any combinations thereof. The I/O interface 2060 may couple the computing machine 2000 to various output devices including video displays, speakers, printers, projectors, tactile feedback

devices, automation control, robotic components, actuators, motors, fans, solenoids, valves, pumps, transmitters, signal emitters, lights, and so forth.

The computing machine 2000 may operate in a networked environment using logical connections through the network interface 2070 to one or more other systems or computing machines across the network 2080. The network 2080 may include wide area networks (WAN), local area networks (LAN), intranets, the Internet, wireless access networks, wired networks, mobile networks, telephone networks, optical networks, or combinations thereof. The network 2080 may be packet switched, circuit switched, of any topology, and may use any communication protocol. Communication links within the network 2080 may involve various digital or an analog communication media such as fiber optic cables, free-space optics, waveguides, electrical conductors, wireless links, antennas, radio-frequency communications, and so forth.

The processor 2010 may be connected to the other elements of the computing machine 2000 or the various peripherals discussed herein through the system bus 2020. It should be appreciated that the system bus 2020 may be within the processor 2010, outside the processor 2010, or both. According to some embodiments, any of the processor 2010, the other elements of the computing machine 2000, or the various peripherals discussed herein may be integrated into a single device such as a system on chip (“SOC”), system on package (“SOP”), or ASIC device.

In situations in which the systems discussed here collect personal information about users, or may make use of personal information, the users may be provided with an opportunity or option to control whether programs or features collect user information (e.g., information about a user’s social network, social actions or activities, profession, a user’s preferences, or a user’s current location), or to control whether and/or how to receive content from the content server that may be more relevant to the user. In addition, certain data may be treated in one or more ways before it is stored or used, so that personally identifiable information is removed. For example, a user’s identity may be treated so that no personally identifiable information can be determined for the user, or a user’s geographic location may be generalized where location information is obtained (such as to a city, ZIP code, or state level), so that a particular location of a user cannot be determined. Thus, the user may have control over how information is collected about the user and used by a content server.

Embodiments may comprise a computer program that embodies the functions described and illustrated herein, wherein the computer program is implemented in a computer system that comprises instructions stored in a machine-readable medium and a processor that executes the instructions. However, it should be apparent that there could be many different ways of implementing embodiments in computer programming, and the embodiments should not be construed as limited to any one set of computer program instructions. Further, a skilled programmer would be able to write such a computer program to implement an embodiment of the disclosed embodiments based on the appended flow charts and associated description in the application text. Therefore, disclosure of a particular set of program code instructions is not considered necessary for an adequate understanding of how to make and use embodiments. Further, those skilled in the art will appreciate that one or more aspects of embodiments described herein may be performed by hardware, software, or a combination thereof, as may be embodied in one or more computing systems. Moreover, any

reference to an act being performed by a computer should not be construed as being performed by a single computer as more than one computer may perform the act.

The example embodiments described herein can be used with computer hardware and software that perform the methods and processing functions described herein. The systems, methods, and procedures described herein can be embodied in a programmable computer, computer-executable software, or digital circuitry. The software can be stored on computer-readable media. For example, computer-readable media can include a floppy disk, RAM, ROM, hard disk, removable media, flash memory, memory stick, optical media, magneto-optical media, CD-ROM, etc. Digital circuitry can include integrated circuits, gate arrays, building block logic, field programmable gate arrays (FPGA), etc.

The example systems, methods, and acts described in the embodiments presented previously are illustrative, and, in alternative embodiments, certain acts can be performed in a different order, in parallel with one another, omitted entirely, and/or combined between different example embodiments, and/or certain additional acts can be performed, without departing from the scope and spirit of various embodiments. Accordingly, such alternative embodiments are included in the scope of the following claims, which are to be accorded the broadest interpretation so as to encompass such alternate embodiments.

Although specific embodiments have been described above in detail, the description is merely for purposes of illustration. It should be appreciated, therefore, that many aspects described above are not intended as required or essential elements unless explicitly stated otherwise. Modifications of, and equivalent components or acts corresponding to, the disclosed aspects of the example embodiments, in addition to those described above, can be made by a person of ordinary skill in the art, having the benefit of the present disclosure, without departing from the spirit and scope of embodiments defined in the following claims, the scope of which is to be accorded the broadest interpretation so as to encompass such modifications and equivalent structures.

What is claimed is:

1. A computer-implemented method to use voice patterns to identify user accounts in hands-free transactions, comprising:

by an application operating on a merchant computing device:

receiving, from one or more user computing devices in response to each of the one or more user computing devices being within an area associated with the merchant computing device, one or more transaction tokens, wherein each of the one or more transaction tokens is comprised of a user voice pattern and a user account identifier of a respective user;

receiving a verbal statement from a particular user without a request;

generating a captured voice pattern of the particular user from the verbal statement of the particular user by using voice recognition software on the verbal statement of the particular user;

identifying a particular transaction token from the one or more transaction tokens based on a comparison of the captured voice pattern of the particular user to the user voice pattern of each of the one or more transaction tokens received from the one or more user computing devices, the particular transaction token being associated with the particular user;

retrieving user account information based on the user account identifier of the particular transaction token associated with the particular user; and communicating, to a processing system, a transaction request, the transaction request comprising transaction details, the user account information, and the particular transaction token.

2. The computer-implemented method of claim 1, further comprising, by the application operating on the merchant computing device, transmitting a signal via a wireless communication, the signal comprising an identifier,

wherein receiving the one or more transaction tokens comprises receiving the one or more transaction tokens in response to the one or more user computing devices receiving the signal when the one or more user computing devices is within the area associated with the merchant computing device.

3. The computer-implemented method of claim 1, further comprising, by the application operating on the merchant computing device, transmitting a beacon signal via a wireless communication, the beacon signal comprising a beacon identifier,

wherein receiving the one or more transaction tokens comprises receiving the one or more transaction tokens in response to the one or more user computing devices receiving the beacon signal when the one or more user computing devices is within the area associated with the merchant computing device.

4. The computer-implemented method of claim 3, further comprising:

by each of the one or more user computing devices: receiving the beacon signal transmitted by the merchant computing device; verifying the beacon signal by comparing the beacon identifier to a database of beacon identifiers; and in response to verifying the beacon signal, generating a transaction token of the one or more transaction tokens.

5. The computer-implemented method of claim 3, wherein the beacon signal is a Bluetooth signal.

6. The computer-implemented method of claim 1, wherein the application operating on the merchant computing device is a hands-free application.

7. The computer-implemented method of claim 1, wherein each of the one or more transaction tokens is received from a hands-free application operating on a respective user computing device of the one or more user computing devices.

8. The computer-implemented method of claim 1, wherein the area associated with the merchant computing device is associated with at least one of a beacon identifier, a set of GPS coordinates, a Wi-Fi address, or a network identifier.

9. The computer-implemented method of claim 8, wherein the application operating on the merchant computing device is in communication with a payment processing system, the method further comprising, by the application operating on the merchant computing device, registering the area associated with the merchant computing device with the payment processing system.

10. The computer-implemented method of claim 1, further comprising presenting, to a merchant system operator, a display of the user account information that is associated with the particular user.

11. A computer program product, comprising: a non-transitory computer-readable storage device having computer-executable program instructions embodied

thereon that when executed by a computer cause the computer to conduct hands-free transactions, the computer-executable program instructions comprising instructions to:

receive, from one or more user computing devices in response to each of the one or more user computing devices being within an area associated with a merchant, one or more transaction tokens, wherein each of the one or more transaction tokens is comprised of a user voice pattern and a user account identifier; receive a verbal statement from a particular user without a request; generate a captured voice pattern of the particular user from the verbal statement of the particular user by using voice recognition software on the verbal statement of the particular user; identify a particular transaction token from the one or more transaction tokens based on a comparison of the captured voice pattern of the particular user to the user voice pattern of each of the one or more transaction tokens received from the one or more user computing devices, the particular transaction token being associated with the particular user; retrieve user account information based on the user account identifier of the particular transaction token associated with the particular user; and communicate, to a processing system, a transaction request, the transaction request comprising transaction details, the user account information, and the particular transaction token.

12. The computer program product of claim 11, further comprising instructions to:

transmit a beacon signal via a wireless communication, the beacon signal comprising a beacon identifier, wherein the instructions to receive the one or more transaction tokens comprise instructions to receive the one or more transaction tokens from the one or more user computing devices in response to each of the one or more user computing devices receiving the beacon signal when each of the one or more user computing devices is within the area associated with the merchant.

13. The computer program product of claim 11, wherein each of the one or more transaction tokens is received from a hands-free application operating on a respective user device of the one or more user computing devices.

14. The computer program product of claim 11, wherein the area associated with the merchant is associated with at least one of a beacon identifier, a set of GPS coordinates, a Wi-Fi address, or a network identifier.

15. The computer program product of claim 11, further comprising computer-executable program instructions to present, to a merchant system operator, a display of the user account information that is associated with the particular user.

16. A system for hands-free transactions, comprising: a storage device; and

a processor communicatively coupled to the storage device, wherein the processor executes application code instructions that are stored in the storage device to cause the processor to:

receive, from one or more user computing devices in response to each of the one or more user computing devices being within an area associated with a merchant associated with the processor, one or more transaction tokens, wherein each of the one or more transaction tokens is comprised of a user voice pattern and a user account identifier; receive a verbal statement from a particular user without a request; generate a captured voice pattern of the particular user from the verbal statement of the particular user by using voice recognition software on the verbal statement of the particular user; identify a particular transaction token from the one or more transaction tokens based on a comparison of the captured voice pattern of the particular user to the user voice pattern of each of the one or more transaction tokens received from the one or more user computing devices, the particular transaction token being associated with the particular user; retrieve user account information based on the user account identifier of the particular transaction token associated with the particular user; and communicate, to a processing system, a transaction request, the transaction request comprising transaction details, the user account information, and the particular transaction token.

17. The system of claim 16, wherein the application code instructions further cause the processor to transmit a beacon signal via a wireless communication, the beacon signal comprising a beacon identifier,

wherein the processor is configured to receive the one or more transaction tokens in response to the one or more user computing devices receiving the beacon signal when the one or more user computing devices is within the area associated with the merchant.

18. The system of claim 16, wherein each of the one or more transaction tokens is received from a hands-free application operating on a respective user computing device of the one or more user computing devices.

19. The system of claim 16, further comprising application code instructions to present, to a merchant system operator, a display of the user account information that is associated with the particular user.

20. The system of claim 16, wherein the area associated with the merchant is associated with at least one of a beacon identifier, a set of GPS coordinates, a Wi-Fi address, or a network identifier.