

(51) International Patent Classification:
G06Q 10/08 (2012.01)(21) International Application Number:
PCT/EP2020/057166(22) International Filing Date:
17 March 2020 (17.03.2020)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
19166289.9 29 March 2019 (29.03.2019) EP(71) Applicant: **TETRA LAVAL HOLDINGS & FINANCE S.A.** [CH/CH]; 70, Avenue Général-Guisan, 1009 PULLY (CH).(72) Inventors: **CORAZZARI, Gianni**; Via Lodovico Gavio-
li 2/D, 41032 CAVEZZO (Modena) (IT). **GARUTI, Gi-
an-Paolo**; Via Taggia 19, 41124 MODENA (IT). **PANZ-
ERA, Davide**; Sjövägen 30, 218 31 BUNKEFLOSTRAND
(SE).(74) Agent: **TETRA PAK - PATENT ATTORNEYS SE**; AB
Tetra Pak, Patent Department, Ruben Rausing's gata, 221 86
LUND (SE).(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR,
TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).**Published:**

— with international search report (Art. 21(3))

(54) Title: A METHOD FOR RECALLING A FOOD PRODUCT AND A SERVER THEREOF

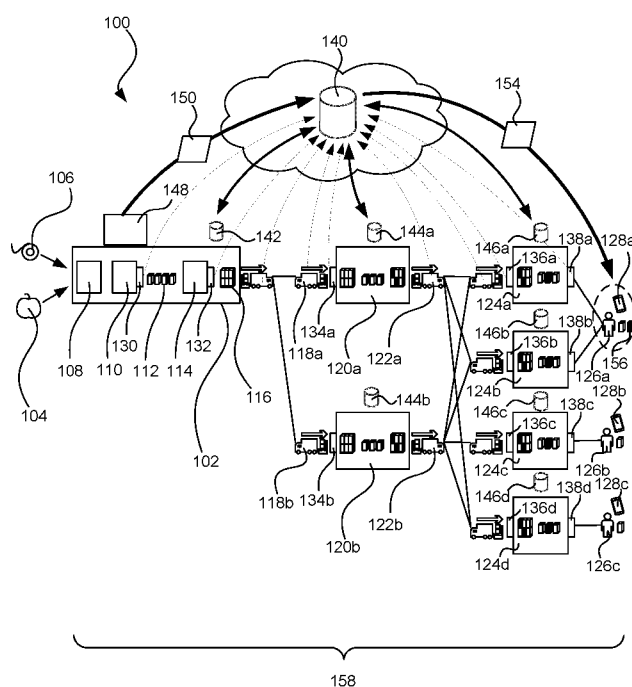


Fig. 1

(57) Abstract: A method (200) for recalling a food product (156) using a server (140). The method comprises receiving (202) a recall request (150) and an identification associated to a food package (156) holding the food product, identifying (204) identification registrations linked to the identification from a number of identification checkpoints (130, 132, 134a-b, 136a-d, 138a-d) provided in a logistic network (158) connecting a packaging site (102) with a consumer (126a-c), wherein each of the identification registrations are associated to a time stamp, identifying (206) a most recent identification registration from the identification registrations, identifying (208) a current logistic node in the logistic network (158) associated with the most recent identification registration, identifying (210) a communication device (128a) associated with the current logistic node, and transferring (212) a recall notification (154) to the communication device (152a).

A METHOD FOR RECALLING A FOOD PRODUCT AND A SERVER THEREOF

Technical Field

The invention relates to the field of food safety and more particularly to the field of recalling food products that have been found not to be appropriate to be consumed.

- 5 More specifically, it is related to a method for recalling a food product and a server arranged for recalling the food product.

Background Art

- 10 In food production today, there are strict food safety regulations to be followed to make sure that consumers are not harmed by food products. The food safety regulations are stipulating which kind of materials that are allowed to be in contact with food products, how often samples should be taken, what type of tests that should be performed on the samples, at which temperature and for how long time the food product should be heat treated in order to be considered safe to consume, and so forth.
- 15 Even though the regulations are in place, frequent samples are made from the food production and several different quality controls are performed, there is from time to time nevertheless a need to recall food products that have been shipped from a food production site.

- 20 Today, when the food products are recalled, distribution centers to which the food packages have been shipped are contacted. If the food packages have been transported from the distribution centers to stores, the distribution centers are in turn contacting the stores. In the event that the food products have reached store shelves and have been sold to consumers before a decision to recall the food products has been made, newspaper and other media can be used for informing the consumers that
- 25 the food products may be harmful and therefore not to be consumed.

- A problem with the approach used today is that there is a risk that the information is halted on its way to the consumer or other party having the food products. Since delivery times from the food production site to the consumer are continuously being improved by e.g. reducing the time the food products are placed in
- 30 distribution centers, and complex transportation networks are used, there is a risk that the food products that are recalled nevertheless reach the consumers.

To avoid that the consumers are harmed, a strict approach with a high margin of safety is often applied. In practice, this means that if being in doubt the food products

are discarded. In other words, to avoid having consumers harmed by food safety non-compliant food products, a large number of food safety compliant food products are discarded to be on the safe side.

Based on the above, there is a need for a method or apparatus that efficiently
5 can provide for that the recall request reaches persons having access to the food products that are recalled such that these are not consumed, and as an effect that health issues can be avoided, and doing this in such a way that food waste can be kept at low levels, such that as few food safety compliant food products are discarded.

10 Summary

It is an object of the invention to at least partly overcome one or more of the above-identified limitations of the prior art. In particular, it is an object to provide a reliable and time efficient recall notification system for food products.

According to a first aspect it is provided a method for recalling a food product
15 using a server. The method may comprise receiving a recall request and an identification associated to a food package holding the food product, identifying identification registrations linked to the identification from a number of identification checkpoints provided in a logistic network connecting a packaging site with a consumer, wherein each of the identification registrations are associated to a time
20 stamp, identifying a most recent identification registration from the identification registrations, identifying a current logistic node in the logistic network associated with the most recent identification registration, identifying a communication device associated with the current logistic node, and transferring a recall notification to the communication device.

25 The method may further comprise requesting a recall confirmation from the communication device, and receiving the recall confirmation from the communication device.

The recall request and the identification may be transferred from a food producer linked to the packaging site, and the method may further comprise
30 transferring the recall confirmation to the food producer.

The logistic network may comprise a number of logistic nodes, wherein the logistic nodes may be chosen from a group consisting of packaging site, distribution centers, transport carriers, stores, food storage devices and consumers.

The identification may comprises a package identification stored in a package
35 identification device provided on or in the food package.

The identification may comprise a carrier identification provided in a carrier identification device provided in or on a carrier, such as a pallet or tray, arranged to hold the food package.

The identification may comprise a batch identification linked to a batch of food packages, wherein the food package holding the food product is one of the batch of food packages.

The method may further comprise receiving a request for product information and the identification from the communication device, transmitting the product information to the communication device, setting the consumer associated to the communication device as the current logistic node.

The product information may comprise best before date.

The communication device may be integrated in a food storage device arranged to store the food product and configured to read the package identification from the food package and to receive the recall notification.

According to a second aspect it is provided a server arranged for recalling a food product, wherein the server comprises a memory, a control unit and a transceiver, wherein the transceiver is configured to: receive a recall request and an identification associated to a food package holding the food product, and transfer a recall notification to a communication device, wherein the control unit is configured to: execute an identification registrations identifier function to identify identification registrations linked to the identification from a number of identification checkpoints provided in a logistic network connecting a packaging site with a consumer, wherein each of the identification registrations are associated to a time stamp, execute a most recent identifier function to identify a most recent identification registration from the identification registrations, execute a current logistic node identifier function to identify a current logistic node in the logistic network associated with the most recent identification registration, and execute an associated communication device function to identify the communication device associated with the current logistic node.

The logistic network may comprise a number of logistic nodes, wherein the logistic nodes are chosen from a group consisting of distribution centers, transport carriers, stores, food storage devices and consumers.

The identification may comprise a package identification stored in a package identification device provided on or in the food package.

The transceiver may further be configured to: receive a request for product information and the identification from the communication device, and transmit the

product information to the communication device, wherein the control unit is further configured to: execute a current logistic node setting function to set the consumer associated to the communication device as the current logistic node.

The communication device may be integrated in the food storage device
5 arranged to store the food product and configured to read the package identification from the food package and to receive the recall notification.

Still other objectives, features, aspects and advantages of the invention will appear from the following detailed description as well as from the drawings.

10 Brief Description of the Drawings

Embodiments of the invention will now be described, by way of example, with reference to the accompanying schematic drawings, in which

Fig. 1 generally illustrates a system for recalling a food product by using a server.

15 Fig. 2 is a flowchart illustrating a method for recalling the food product.

Fig. 3 illustrates the server in further detail.

Detailed description

With reference to fig. 1 a system 100 for recalling a food product is illustrated by
20 way of example. The system 100 comprises a packaging site 102 to which food material 104, e.g. apples to be turned into apple juice, and packaging material 106, e.g. reels of carton packaging material, can be provided. In processing equipment 108 the food material can be formed into the food product. In package equipment 110, the food product can be packaged such that food packages 112 holding the food product are
25 provided. The food packages 112, sometimes also referred to as primary packages, can thereafter be grouped and packaged in secondary packages by downstream equipment 114, also sometimes referred to as a secondary packaging machine. The downstream equipment 114 may also involve a palletizer arranged to pack the secondary packages, or the primary packages directly, onto a pallet, or in more general
30 terms a carrier 116.

From the packaging site 102 the carrier 116 holding the packages 112 may be transported by transport carriers 118a, 118b to distribution centers 120a, 120b. The distribution center 120a, 120b may be a facility owned by a retailer in which goods from various food producers and other types of producers are delivered, repackaged and
35 transported by transport carriers 122a, 122b to stores 124a, 124b, 124c, 124d. The

stores 124a, 124b, 124c, 124d may be physical stores, such as grocery stores, in which consumers 126a, 126b, 126c collect the food products to buy and pay at a check out to a cashier, but it may also be a so-called dark store in which the food products are ordered online and collected manually by store personnel or automatically by robots or the like.

As illustrated in fig. 1, several distribution centers 120a, 120b can deliver food products to the same store 124a, 124b, 124c, 124d and one and the same store can receive the food products from many different distribution centers. Further, it is also possible that the food products are transported from one store to another, or that the food products can be transported from one distribution center to another, or from the store to the distribution center. Further, as illustrated, one and the same consumer 126a may buy the food products from different stores. In addition, even though not illustrated, it is possible that the food products are given from one consumer to another, and also that additional or fewer layers of logistic nodes are provided.

The consumers 126a, 126b, 126c may have communication devices 128a, 128b, 128c, such as mobile phones. Since the communication devices 128a, 128b, 128c can be associated with user identifications these may be associated to the consumers. An advantage with this, in this context, is that if it can be identified that the food product is bought by one of the consumers 126a, the consumer can be reached via the communication device 128a associated to him or her in case the food product is recalled. In a similar manner, communication devices may be associated to the packaging site 102, the distribution centers 120a, 120b, and the stores 124a, 124b, 124c, 124d. For instance, personnel working at the distribution centers may have special communication devices for knowing what products to pick when repackaging, and in order to provide for that recall information is provided efficiently this information may be provided to the personnel via these devices. Another option is to have communication devices in the form of digital dashboards or mobile phones.

To be able to keep track of the food product, identification checkpoints may be provided in the system 100. The identification checkpoints can read a package identification device, such as an RFID tag or NFC chip, provided in or on the food package holding the food product. Since each package can be provided with a unique identification the package can be followed from the packaging site 102 to the consumers 126a, 126b, 126c. Identification checkpoints 130, 132, 134-b, 136a-d, 138a-d may be provided at the packaging equipment 110, at the downstream equipment 114, at delivery points at the distribution centers 120a-b, at delivery points

at the stores 124a-d, at the check-out at the stores 124a-d by way of example. As an alternative to having the package identification device in or on the package, the package identification can be printed onto the package.

5 The identification used for tracing the food products is however not restricted to package identification, but can also comprise a carrier identification, such that the food product can easily be found even if being packed onto a pallet or the like. Further, the identification can comprise a batch identification such that the food products related to the same batch can be spotted expediently. As described above, the identification may be a unique identification, but if enough to be able to trace down to batch level, and not
10 down to package level, the identification can be batch unique. By not having each package provided with a unique identification, a more cost efficient solution may be achieved.

The identification checkpoints 130, 132, 134-b, 136a-d, 138a-d may transfer identification data read from the packages and the carriers to a server 140. By being
15 provided with this data, the server 140 can trace the packages and carriers as they are being transported from the packaging site 102 to the consumers 126a, 126b, 126c. To provide redundancy and to handle situations when the data communication is down, sub-databases 142, 144a-b, 146a-d may be provided for the packaging site 102, the distribution centers 120a, 120b and the stores 124a-d.

20 To assure food safety as well as food quality, quality control equipment 148 may be provided. In the system 100 illustrated in fig. 1 by way of example, it is illustrated that this is connected to the packaging site 102. It is however also possible to have quality control equipment 148 in other places as well, such as in the distribution centers 120a-b,

25 In case it is detected that food products not safe to consume have been produced and shipped from the packaging site 102, a recall request 150 and the identification associated to the food package holding the food product can be transmitted from the quality control equipment 148 to the server 140. By having access to all the data generated by the identification checkpoints 130, 132, 134-b, 136a-d,
30 138a-d, identification registrations linked to the food package can be identified. By using time stamps associated with the identification registrations, a most recent identification registration can be identified. In turn, based on this most recent identification registration a current logistic node can be identified. In other words, it can be determined where the package was last registered. By having communication
35 devices associated to the logistic nodes, e.g. the packaging site 102, the transport

carriers 118a-b, 122a-b, the stores 124a-d and the consumers 126a-126c, the communication device associated to the current logistic node can be identified and thereafter a recall notification can be transferred to this communication device 128a.

For instance, in case the food product held in the package 156 is to be recalled, the consumer 126a would be found to be the current logistic node and the communication device 128a associated to him or her would be the communication device to which the recall notification is transmitted. In this way, the package 156 can be identified in a logistic network 158 connecting the packaging site 102 with the consumers 126a-c.

Associating the communication device 128a to the consumer 126a can be achieved in different ways. For instance, if paying groceries by using the communication device 128a, e.g. by using a non-physical credit card or other payment solution, such as Apple Pay™, linked to the mobile phone, or having a credit card to be used in combination with the mobile phone, e.g. by using the face recognition or fingerprint recognition capability of the mobile phone for verifying identity of the consumer, the communication device 128a is associated to the consumer 126a for payment purposes. The fact that there is already an association made for a different purpose can be made use of. For instance, during the payment process, a question can be posed to the consumer if he or she would link to be contacted via the communication device 126a, used in the payment process, in case any of the food products being purchased is recalled. If the consumer answers affirmative, the association can be made. Another option is to make the association automatically without posing any question. The communication device 128a may also be associated indirectly to the consumer 126a. For instance, if food products are purchased and these are linked to a membership card, this may in turn be connected to the communication device 128a of the user in case there is a link between the membership card and the communication device.

Still an option, in case the consumer 126a uses self-scanning when grocery shopping, i.e. scanning bar codes of the food products himself or herself by using a scanner provided by the store, the scanner may connect to the communication device 128a, such as the mobile phone, of the consumer 126a and associate the food product that is scanned to the scanner also to the communication device. This option may prove particularly advantageous if the package identification is printed onto the package, such as a QR code. In this case, in case the scanner is an optical scanner, a bar code used for registering the food product for payment purposes and the package

identification used for recall purposes may namely be read by one and the same device.

The approach described above is further illustrated in fig. 2 in which a flowchart illustrating a method 200 for recalling the food product using the server 140 is provided.

5 In a first step 202, the recall request can be received. Next, in a second step 204, identification registrations from the identification checkpoints linked to the identification from a number of the identification checkpoints in the logistic network can be identified. Each of the identification registrations are associated to a time stamp. Thereafter, in a third step 206, a most recent identification registration can be identified. Then, in a fourth step 208, by making use of that the identification checkpoints locations are known, the current logistic node associated with the most recent identification registration can be identified. Next, in a fifth step 210, the communication device associated with the current logistic node can be identified. Thereafter, in a sixth step 212, a recall notification can be transferred to the communication device.

15 Optionally, in order to be certain that the recall notification has been received safely, a recall confirmation can be requested in a seventh step 214, and in an eighth step 216 the recall confirmation can be received.

Optionally, in order to provide a food producer, e.g. a company running the packaging site 102, with information that the recall confirmation has been received, the recall confirmation can be transferred to the food produced in a ninth step 218.

20 In addition, the food product can be linked to the communication device not only based on data collected by the identification checkpoints. In a tenth step 220, a request for product information and the package identification may be received by the server from the communication device. The product information may comprise best before date, nutritional value or other food related information. After having received the request, in an eleventh step 222, the product information may be transmitted to the communication device. By knowing the package identification and how to contact the consumer via the communication device, the consumer associated with the communication device may be set as the current logistic node in a twelfth step 224.

30 The communication device does not have to be a device solely made for communication. For instance, the communication device may be integrated in a food storage device arranged to store the food product and configured to read the identification from the food package and to receive the recall notification. For example, a smart fridge that can read the identification of the package in order to create grocery shopping lists and notify about close best before dates may also comprise the

35

functionality of receiving recall notifications related to the food products held in the smart fridge.

Fig. 3 illustrates the server 140 for recalling the food product in further detail. The server 140 may comprise a memory 302, a control unit 304 comprising a
5 processor 306, and a transceiver 308.

The transceiver 308 may be configured to receive the recall request and the identification associated to the food package 156 holding the food product, and to transfer the recall notification to the communication device 128a.

The memory 302 may comprise instructions in the form of functions that can be
10 executed by the control unit 308. It can be provided an identification registrations identifier function 310 to identify identification registrations linked to the identification from a number of identification checkpoints provided in a logistic network connecting a packaging site with a consumer, wherein each of the identification registrations are associated to a time stamp. Further, a most recent identifier function 312 to identify a
15 most recent identification registration from the identification registrations can be provided. Still further, a current logistic node identifier function 314 to identify a current logistic node in the logistic network associated with the most recent identification registration, and an associated communication device function 316 to identify the communication device associated with the current logistic node can be provided.

20 Optionally, the transceiver 308 may further be configured to receive a request for product information and the package identification from the communication device 126a-c, and transmit the product information to the communication device 126a-c, and the memory 302 may further comprise a current logistic node setting function 318 to set a consumer 126a associated with the communication device 126a-c as the current
25 logistic node.

From the description above follows that, although various embodiments of the invention have been described and shown, the invention is not restricted thereto, but may also be embodied in other ways within the scope of the subject-matter defined in the following claims.

CLAIMS

1. A method (200) for recalling a food product (156) using a server (140), said
5 method comprising
receiving (202) a recall request (150) and an identification associated to a food
package (156) holding the food product,
identifying (204) identification registrations linked to the identification from a
number of identification checkpoints (130, 132, 134a-b, 136a-d, 138a-d) provided in a
10 logistic network (158) connecting a packaging site (102) with a consumer (126a-c),
wherein each of the identification registrations are associated to a time stamp,
identifying (206) a most recent identification registration from the identification
registrations,
identifying (208) a current logistic node in the logistic network (158) associated
15 with the most recent identification registration,
identifying (210) a communication device (128a) associated with the current
logistic node, and
transferring (212) a recall notification (154) to the communication device (152a).
- 20 2. The method according to claim 1, further comprising
requesting (214) a recall confirmation from the communication device (152a),
and
receiving (216) the recall confirmation from the communication device (152a).
- 25 3. The method according to claim 2, wherein the recall request (150) and the
identification is transferred from a food producer linked to the packaging site (102), said
method further comprising
transferring (218) the recall confirmation to the food producer.
- 30 4. The method according to any one of the preceding claims, wherein the
logistic network (158) comprises a number of logistic nodes, wherein the logistic nodes
are chosen from a group consisting of packaging site (102), distribution centers (120a-
b), transport carriers (118a-b, 122a-b), stores (124a-d), food storage devices and
consumers (126a-c).

5. The method according to any one of the preceding claims, wherein the identification comprises a package identification stored in a package identification device provided on or in the food package (156).

5 6. The method according to any one of the preceding claims, wherein the identification comprises a carrier identification provided in a carrier identification device provided in or on a carrier (116), such as a pallet or tray, arranged to hold the food package.

10 7. The method according to any one of the preceding claims, wherein the identification comprises a batch identification linked to a batch of food packages, wherein the food package holding the food product is one of the batch of food packages.

15 8. The method according to any one of the preceding claims, further comprising
receiving (220) a request for product information and the identification from the communication device,
transmitting (222) the product information to the communication device,
20 setting (224) the consumer (126a) associated to the communication device (152a) as the current logistic node.

 9. The method according to claim 8, wherein the product information comprises best before date.

25 10. The method according to any one of the preceding claims, wherein the communication device (126a-c) is integrated in a food storage device arranged to store the food product and configured to read the package identification from the food package and to receive the recall notification.

30 11. A server (140) arranged for recalling a food product, wherein the server comprises a memory (302), a control unit (304) and a transceiver (308),
wherein the transceiver (308) is configured to:
receive a recall request (150) and an identification associated to a food package
35 holding the food product, and

transfer a recall notification (154) to a communication device (152a),
wherein the control unit (304) is configured to:

execute an identification registrations identifier function (310) to identify
identification registrations linked to the identification from a number of identification
5 checkpoints provided in a logistic network connecting a packaging site with a
consumer, wherein each of the identification registrations are associated to a time
stamp,

execute a most recent identifier function (312) to identify a most recent
identification registration from the identification registrations,

10 execute a current logistic node identifier function (314) to identify a current
logistic node in the logistic network associated with the most recent identification
registration, and

execute an associated communication device function (316) to identify the
communication device associated with the current logistic node.

15

12. The server according to claim 11, wherein the logistic network (158)
comprises a number of logistic nodes, wherein the logistic nodes are chosen from a
group consisting of distribution centers (120a-b), transport carriers (118-b, 122a-b),
stores (124a-d), food storage devices and consumers (126a-c).

20

13. The server according to any one of the claims 11 or 12, wherein the
identification comprises a package identification stored in a package identification
device provided on or in the food package.

25

14. The server according to any one of the claims 11 to 13,
wherein the transceiver (308) is further configured to:

receive a request for product information and the identification from the
communication device (126a-c), and

transmit the product information to the communication device (126a-c),

30

wherein the control unit (304) is further configured to:

execute a current logistic node setting function (318) to set the consumer (126a)
associated to the communication device (126a-c) as the current logistic node.

15. The server according to any one of the claims 11 to 14, wherein the
35 communication device (152a-c) is integrated in the food storage device arranged to

store the food product and configured to read the package identification from the food package (156) and to receive the recall notification.

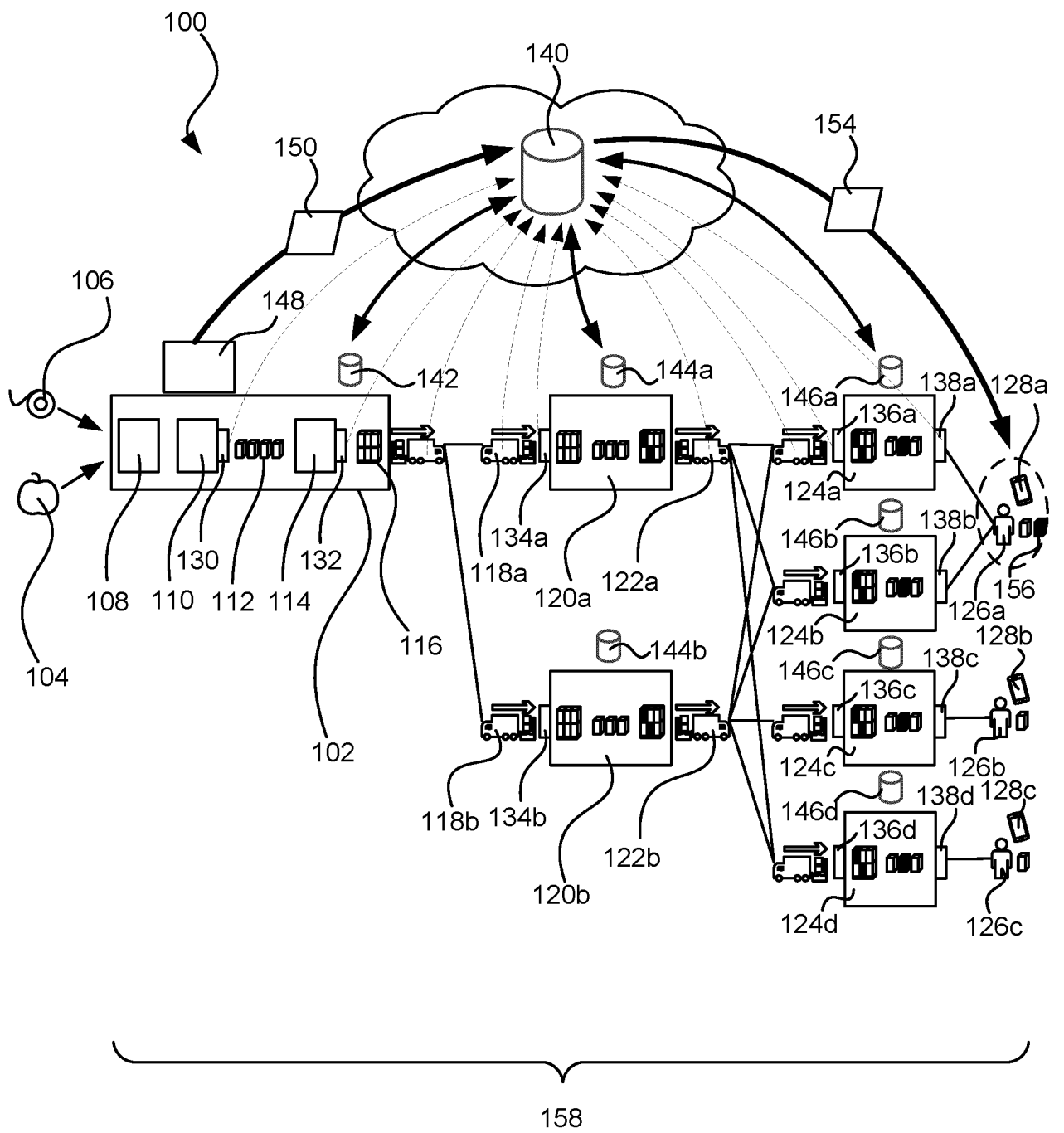


Fig. 1

2/3

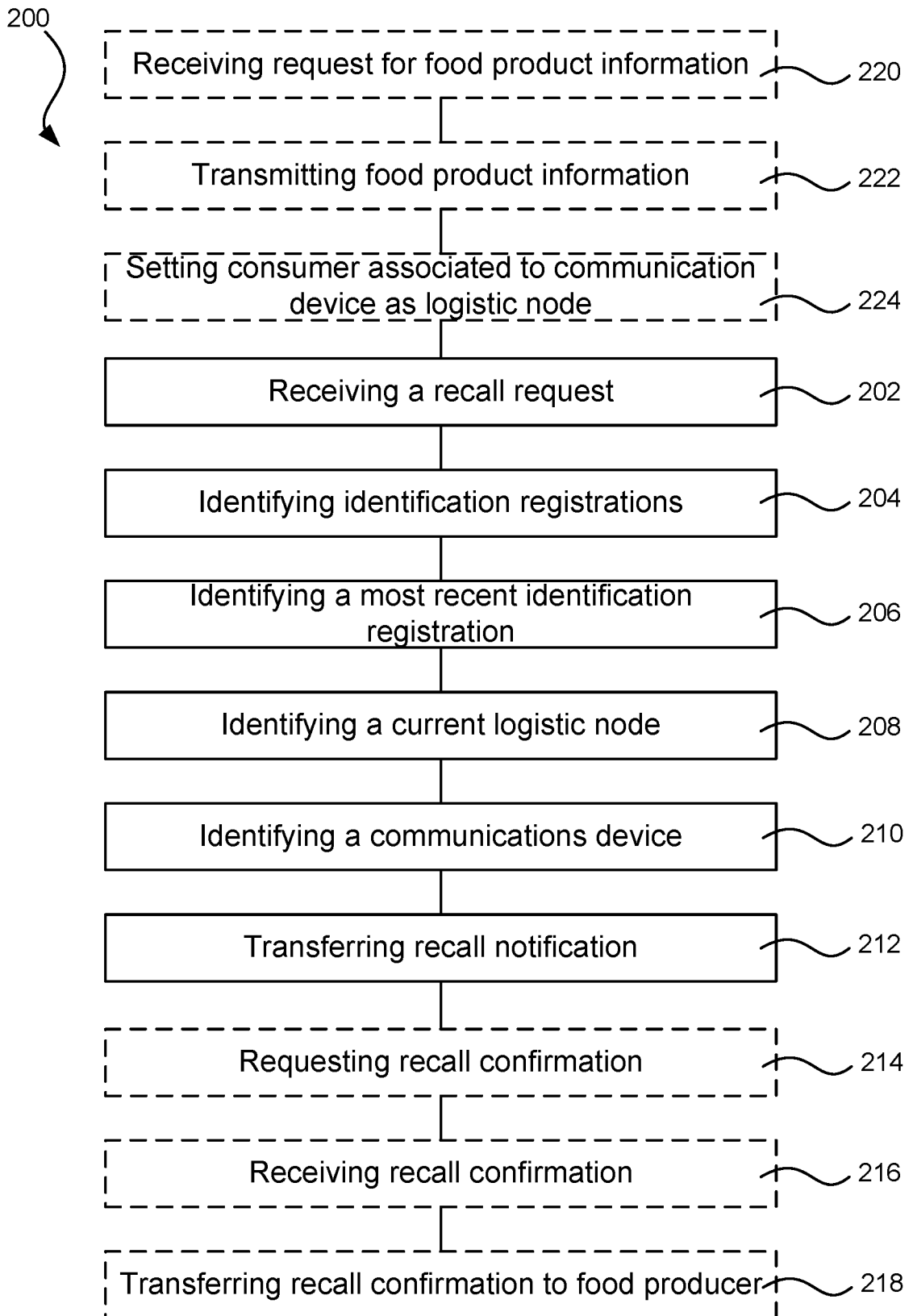
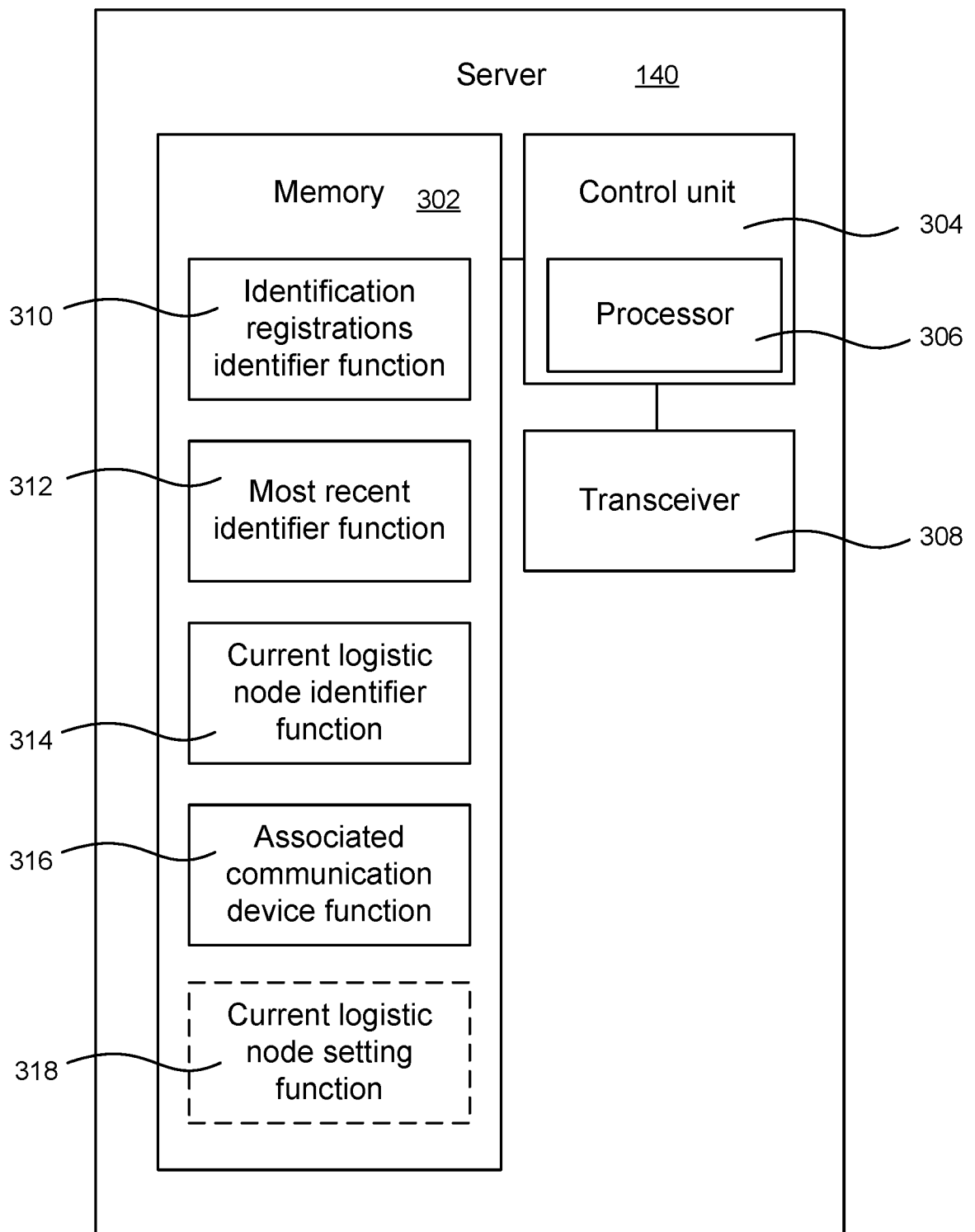


Fig. 2

3/3

*Fig. 3*

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2020/057166

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06Q10/08
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2009/148998 A2 (WS PACKAGING GROUP INC [US]; ULAND DAVID M) 10 December 2009 (2009-12-10) paragraphs [0004] - [0010], [0026], [0028] - [0032], [0036], [0038], [0040] - [0044]; claims; figures -----	1-15
X	US 2009/204415 A1 (BAIERA STEVEN M [US]) 13 August 2009 (2009-08-13) paragraphs [0005], [0006], [0023] - [0029], [0032] - [0039], [0043], [0044], [0046] - [0049]; claims; figures 2,3 ----- -/--	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

16 April 2020

Date of mailing of the international search report

29/04/2020

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Herry, Tzvetanka

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2020/057166

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2011/047278 A2 (FOODTRACK INC [US]; WAITE ROBERT J [US]) 21 April 2011 (2011-04-21) paragraphs [0010], [0022], [0047], [0050] - [0052], [0066], [0088], [0093], [0096], [0106] - [0108], [0119], [0123], [0177] -----	1-15
X	WO 2011/010958 A1 (TETRA LAVAL HOLDINGS & FINANCE [CH]; LJUNGKRANTZ STEFAN [BR] ET AL.) 27 January 2011 (2011-01-27) page 3, lines 1-3 page 4, line 1 - page 7, line 5 page 9, line 3 - page 11, line 8; claims -----	1-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2020/057166

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2009148998 A2	10-12-2009	US 2011098026 A1 US 2014084056 A1 WO 2009148998 A2	28-04-2011 27-03-2014 10-12-2009
US 2009204415 A1	13-08-2009	NONE	
WO 2011047278 A2	21-04-2011	CA 2777826 A1 EP 2488997 A2 US 2011093400 A1 US 2011093401 A1 US 2013254120 A1 WO 2011047278 A2	21-04-2011 22-08-2012 21-04-2011 21-04-2011 26-09-2013 21-04-2011
WO 2011010958 A1	27-01-2011	BR 112012001565 A2 CN 102473256 A EP 2457199 A1 JP 2013500219 A JP 2015214425 A RU 2012106259 A RU 2015139880 A SE 0901035 A1 UA 110462 C2 US 2012173447 A1 WO 2011010958 A1	08-03-2016 23-05-2012 30-05-2012 07-01-2013 03-12-2015 27-08-2013 26-12-2018 25-01-2011 12-01-2016 05-07-2012 27-01-2011