(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
20 December 2018 (20.12.2018)

WIPO | PCT

(10) International Publication Number
WO 2018/229454 A1

(51) International Patent Classification:
A01K 5/01 (2006.01) *B65B 69/00* (2006.01)
A01K 5/02 (2006.01)

(21) International Application Number:
PCT/GB2018/000087

(22) International Filing Date:
23 May 2018 (23.05.2018)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
1709493.9 15 June 2017 (15.06.2017) GB

(72) Inventor; and
(71) Applicant: **WONG, Ricky** [GB/GB]; 1 Warnham Grove, Orpington, Kent BR5 3FT (GB).

(74) Agent: **FRY, David John**; Agile IP LLP, Airport House, Purley Way, Croydon, Surrey CR0 OXZ (GB).

(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, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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))*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(54) Title: DISPENSING APPARATUS

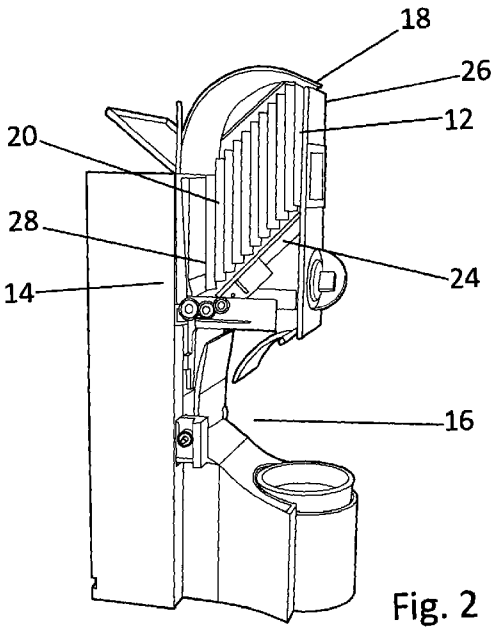

Fig. 2

(57) Abstract: Dispensing apparatus which is able on demand or at pre-set times to dispense wet or dry flowable material initially retained within sealed sachets from a storage chamber to a discharge station of the apparatus. The apparatus comprises means for moving said stored sachets incrementally towards the discharge station whereat individual sachets are discharged through a discharge opening formed in said storage chamber. Means are provided for delivering the flowable contents of each sachet to a discharge outlet of the apparatus.

WO 2018/229454 A1

DISPENSING APPARATUS

Field of the invention

This invention relates to dispensing apparatus for dispensing discrete quantities of stored flowable wet or dry animal feed located within sealed sachets or pouches (referred to below as "sachets") periodically or on demand to a receptacle such as a feeding bowl.

Background to the invention

Many pet owners who work or are away from home for long periods of time encounter problems in ensuring that their pets are provided with food regularly during such periods. Leaving food to which a pet has ready access is considered unacceptable for health reasons and known devices for periodically making food available to a pet are neither reliable nor practical.

One such known device is disclosed in US2015/0181837. However, the device disclosed in this patent application is, like many other similar devices, able only to dispense dry feed. The dispensing apparatus of the present invention has the distinct advantage over such known devices in that it is able selectively to dispense either wet or dry flowable feed contained in sealed sachets stored in the apparatus.

Summary of the invention

In one aspect the present invention provides dispensing apparatus able on demand or at pre-set times to dispense wet or dry feed material initially retained within sealed sachets to a discharge station of the apparatus, said apparatus comprising a

storage section for retaining a multiplicity of sealed sachets, means for enabling sealed sachets to move incrementally from said storage section to a sachet opening section, means located in said opening section for opening in turn each sachet received from said storage section, and means for applying pressure to each opened sachet to cause its content of wet or dry feed material to flow to a discharge opening of the discharge station of the dispensing apparatus.

The storage section may comprise a plurality of individual holding chambers each sized to receive and hold a single sachet of wet or dry feed material.

Each holding chamber may be defined between a pair of aligned partitions.

In an alternative arrangement, the storage section may comprise at least one holding chamber sized to receive and retain a plurality of sachets of wet or dry feed material.

The floor of the storage section may be inclined towards a discharge opening formed in the floor to enable sealed sachets to move in turn to the sachet opening section of the apparatus.

The discharge opening may be closed by a cover which is opened on demand to enable a sachet to pass from the storage section to the sachet opening section of the apparatus.

The opening station may include a cutting tool in the form of a generally horizontal blade movable towards and into contact with an end surface of a sachet and positioned in the sachet opening section of the apparatus.

The blade may include at least one inclined surface.

Means may be provided for applying pressure to each sachet once opened to remove its content and to transfer said content to said discharge station.

The means for applying pressure to each said sachet may comprise a roller movable over an exposed surface of an opened sachet. The roller may be supported between articulated side arms.

The means for moving said sachets along said storage chamber is operated through a switch located on the apparatus.

Alternatively, the means for moving said sachets along said storage chamber is operated in response to a timing mechanism of the apparatus.

Alternatively, the means for moving said sachets along said storage chamber is operated remotely through an electronic signal.

A holding chamber may be positioned above the dispensing apparatus for retaining additional sachets of wet or dry feed material, means being provided automatically to transfer these additional sachets to the dispensing chamber when the dispensing chamber is empty of sachets.

The storage apparatus may comprise an assembly which includes a vertical array of shelves each sized to receive a single sachet of wet or dry feed material, means being provided for removing such sachets individually from said assembly and transporting each sachet to the sachet opening section of the apparatus.

The means for removing sachets from the assembly may comprise a lifting tray movable to positions alongside and below a selected

shelf to effect transfer of the respective sachet to the sachet opening section of the apparatus.

Each sachet may be retained within a cassette which includes a tray-shaped base and a lid, the cassette further including a rotatable arm located at one side of the base and formed with a slot for receiving one end of a sachet positioned in the cassette, and a cutting tool for removing the end of the sachet remote from the rotatable arm, said arm being rotatable to wind the cassette about the arm to effect removal of the sachet contents and to deposit such contents onto the tray-shaped base of the cassette.

In another aspect, the invention provides dispensing apparatus able on demand or at pre-set times to dispense wet or dry animal feed retained within sealed sachets from a storage section to a discharge station of the apparatus, said storage section comprising an assembly of holding members each able to receive and retain one said sachet, said apparatus further comprising means for removing each sachet in turn from said assembly of holding members and for transferring each such removed sachet to an opening section at which it is opened and its contents transferred to a discharge station of the apparatus.

In a still further aspect, the invention provides dispensing apparatus able on demand or at pre-set times to dispense wet or dry flowable feed initially retained within sealed sachets from a storage station to a discharge station of the apparatus, said dispensing apparatus comprising means for moving said stored sachets incrementally from said storage station to a sachet opening station which includes means for opening each sachet in turn and means for applying pressure to each opened sachet to cause its contents to flow to said discharge station of the apparatus.

Means for automatically removing debris from the apparatus may be provided. Such means may comprise a cleaning rod which moves automatically or manually over the surface of the sachet opening station. The rod may include a layer of foam or like material which is in contact with the said surface during the cleaning process.

The means for moving said sachets or discrete portions along said storage chamber may be operated through a switch located on the apparatus, in response to a timing mechanism of the apparatus, or remotely through an electronic signal.

A holding station may be positioned above the storage station of the dispensing apparatus for retaining additional sachets of wet or dry material, means being provided automatically to transfer said additional sachets from said holding station to said storage station when the storage station is empty of sachets or wet or dry material.

Means may be provided to initiate operation of the dispensing apparatus remotely through, for example, a mobile telephone, a laptop or a webcam/treat upgrade. Alternatively, or additionally, the dispensing apparatus may be programmed to operate at selected times of a day, or indeed at selected times on selected days.

Alternatively, or additionally the dispensing apparatus may be operated through a simple on/off switch.

In a still further aspect, the invention provides dispensing apparatus able on demand or at pre-set times to dispense sealed sachets of wet or dry flowable feedstuff from a storage area of the apparatus to a discharge area of said apparatus, the apparatus comprising an assembly of holding stations each able

to receive and store one said sachet, means for moving said assembly step-wise towards said discharge area whereby each said holding station is moved in turn to said discharge area, means for enabling a sachet positioned in said discharge area to leave its holding station and means for opening each said sachet and discharging its contents through an outlet of the apparatus.

Brief Description of the Drawings

The invention will now be described by way of example only with reference to the accompanying drawings, in which:-

Figure 1 is an isometric view of dispensing apparatus in accordance with the invention;

Figure 2 shows the apparatus of Figure 1 with its side panels removed;

Figures 3 to 7 are isometric views of features of the dispensing apparatus illustrated in Figures 1 and 2 to an enlarged scale with the sides of the apparatus removed;

Figures 8 to 10 are isometric views of features of an alternative dispensing apparatus to that shown in Figures 1 to 7; and

Figures 11 and 12 are isometric views of sachet retaining cassettes employed in a further embodiment of the invention;

Figure 13 is an isometric view of further dispensing apparatus in accordance with the invention in which the cassettes illustrated in Figures 11 and 12 are employed; and

Figures 14 and 15 are isometric views of features of the dispensing apparatus illustrated in Figure 13.

Detailed Description of the Invention

The dispensing apparatus illustrated in the drawings can be employed to dispense discrete quantities of wet or dry animal feed retained within sealed sachets housed within the apparatus either on demand or at regular predetermined intervals or in response to remotely provided instructions, for example by means of a mobile telephone or laptop or webcam/treat upgrade.

For the sake of simplicity, the invention is described below in the context of flowable animal food retained in sealed sachets.

The dispensing apparatus illustrated in Figures 1 to 7 of the drawings includes a housing 10 having an elongate sachet holding section 12, a sachet opening and emptying section 14 and a food discharge section 16.

As shown in these Figures, the holding section 12 comprises a chamber 18 loaded with a plurality of vertically aligned sealed sachets 20 each containing a measured quantity of wet or dry flowable animal food. Loading of the sachets into the chamber is facilitated by opening a hinged or removable front and side panel 22 of the chamber.

As will be seen from Figure 2, the floor 24 of the chamber 18 is inclined to cause the sachets 20 loaded in the chamber to move under gravity from the uppermost end 26 of the chamber 18 adjacent to the front face of the chamber towards the lowermost end 28 of the chamber. The inclined floor 24 ensures that the entire loaded batch of sachets moves as one towards the chamber end 28 as sachets are removed individually from the chamber.

Thus, sachets loaded into the chamber 18 move sequentially towards the chamber end 28 as individual sachets pass from the chamber to the opening and emptying section 14 of the dispenser.

As will be seen from Figures 3 and 4 the opening and emptying section 14 includes a suitably sized slot-shaped opening 30 formed in the floor of the chamber 18 at its lowermost end. The slot is normally closed by a cover which is opened on demand through, for example, operating a switch located on the outer casing of the dispenser, or automatically at pre-set times, or remotely through a mobile telephone or like device.

As a sachet passes through the opening 30, the remaining sachets in the chamber move downwardly due to the inclined floor whereby the lowermost sachet is positioned immediately above the now closed opening 30.

As a sachet leaves the chamber 18, it falls vertically into a generally vertical chamber 32 with the upper edge of the sachet in line with a cutting tool 34 (see especially Figure 5) which is moved horizontally by a drive mechanism 36 towards and into contact with the sachet to remove the upper edge portion of the sachet. In the illustrated arrangement the blade 35 of the cutting tool 34 is driven towards and away from the sachet by a motor 36 turning a lead screw 37.

The cutting edge of the blade 35 preferably comprises a plurality of inclined surfaces 38, three such surfaces being shown in Figure 5.

To remove the blade 35 a drive pin (not shown) is provided which passes through openings 39 provided the sides of the blade housing and into contact with one side of the blade to move the blade through an opening 41 in one side of the housing. Once

removed a fresh blade can be introduced into the housing through the opening 41.

A debris cleaning member maybe positioned above the surface of the chamber 32, this member being movable over the chamber surface to remove any remaining debris present in the chamber. The debris cleaning member may include a layer of cleaning material such as a foam lining to assist the debris cleaning of the chamber. The drive member of the cleaning member may operate automatically after each or a selected number of sachets have passed through the chamber 32, or may be operated manually.

One side of the chamber 32 is defined by an inclinable wall 40 which turns automatically following completion of the cutting of the sachet through approximately 180 degrees whereupon a roller 42 (see Figures 6 and 7) carried by articulated side arms 44 is moved over the exposed side of the sachet to cause the sachet contents to flow into a vessel 46.

A guard 50 is provided to inhibit accidental access to the cutting tool 34 and the related mechanism.

In the embodiment illustrated in Figures 8 to 10 of the drawings, the chamber 18 includes a plurality of vertically aligned partitions 52, each neighbouring pair of which defines a space 54 for receiving and retaining a sachet 20.

Positioned above the chamber 18 is a similarly sized storage chamber 56 which includes a series of partitions 58 which define spaces 60 into which additional sachets 62 can be loaded.

As shown in Figures 8 to 10, the partitions 52, 58 and therefore the sachet receiving spaces 54, 60 are located immediately above one another.

In this embodiment, the upper storage chamber 56 remains stationary and the lower chamber 18 is moved incrementally on demand, or automatically at pre-set times, or remotely through a mobile telephone or like device towards the opening 30 to cause a sachet to leave the chamber for cutting and removal of its contents.

Incremental movement of the chamber 18 and the sachets loaded into the chamber is affected by a ratchet mechanism which operates to move each sachet in turn towards and through the opening 30 and thence to the cutting section of the apparatus after which removal of the wet or dry flowable contents of each sachet takes place as described above.

The opening 30 may, in this embodiment, remain open at all times or may be closable as previously described.

Incremental movement of the sachets through the discharge opening occurs as described above with reference to the embodiment illustrated in Figures 1 to 7.

When all sachets have been removed from the chamber 18, pinions 64 movable along racks 66 positioned below the chamber 18 are automatically operated to move the chamber 18 back to the position shown in Figures 8 and 9. Once the chamber 18 reaches the position shown in Figures 8 and 9, the individual floor sections below each space 60 are opened automatically to enable the sachets 62 retained within the storage chamber 56 to fall under gravity into the spaces 54.

The process described above is then repeated.

Turning now to the embodiment illustrated in Figures 11 to 15, the main difference between this embodiment and those described

previously is that the unopened sachets 20 are located in cassettes 70.

Each cassette 70 includes a tray-shaped base 72 in which a sachet 20 can be loaded. Each base includes a pivotal lid 74 which includes a frame mounted cover which can be slid to one side to expose the base interior. As will be seen from Figures 11 and 12, one end of the sachet is positioned in a slot formed in a rotatable arm 76 which extends across one end of the cassette 70.

The lid 74 is then closed and the cassette positioned on one of two spaced arrays of vertically spaced shelves 78 of the cabinet illustrated in Figure 13.

For ease of illustration, only one cassette is shown in Figure 13. In practise, cassettes would generally be loaded by hand on each of the shelves of the cabinet. Once loaded, the front of the cabinet is closed by a door or panel (not shown).

As will be seen from Figure 13, the support shelves 78 of each vertical array are separated by a vertical space 80 in which is located a lifting tray 82 which can be moved vertically by rotation of a threaded rod 84 which engages a suitably threaded bore formed in the support tray 82.

Thus, the support tray 82 can be moved selectively from its lowermost position at the foot of the vertical arrays of support shelves 78 to any position alongside a selected pair of stationary support shelves 72. As mentioned above, in practise, cassettes would be loaded onto each of the two illustrated arrays.

Each support shelf 78 is formed with a pair of open-ended slots 86 to assist loading onto and removal of the cassettes from the shelves 78. When in position, the support tray is moved sideways to cause the respective cassette to be located on or removed from the respective support shelf.

As will be seen from Figures 14 and 15, when the illustrated apparatus is operated either automatically on demand or at regular predetermined intervals or in response to remotely provided instructions, an un-opened cassette is automatically retrieved from a selected shelf by the support tray mechanism and moved downwardly to the sachet opening station at the foot of the assembly of shelves.

To expose the contents of a sachet, the respective cassette is moved automatically to the opening station shown in Figure 14 and the sachet end remote from the arm 76 is slit by a blade mechanism as described above to enable the sachet contents to be deposited onto the surface of the base 72 by automatic rotation of the rotatable arm 76. The cassette containing the sachet contents is then moved to the position shown in Figure 15 for feeding purposes.

After a set time, the cassette is closed and returned to its initial position within the assembly of shelves for subsequent removal and replacement.

It will be appreciated that the foregoing is merely exemplary of dispensing apparatus in accordance with the invention and that various modifications can readily be made thereto without departing from the true scope of the claims as set out in the appended claims.

CLAIMS

1. Dispensing apparatus able on demand or at pre-set times to dispense wet or dry feed material initially retained within sealed sachets (20) to a discharge station (16) of the apparatus, said apparatus comprising a storage section (12) for retaining a multiplicity of sealed sachets (20), means for enabling sealed sachets to move incrementally from said storage section to a sachet opening section (14), means (34) located in said opening section for opening in turn each sachet received from said storage section, and means for applying pressure (42) to each opened sachet to cause its content of wet or dry feed material to flow to a discharge opening of the discharge station (16) of the dispensing apparatus.

2. Dispensing apparatus as claimed in claim 1 wherein the storage section (12) comprises a plurality of individual holding chambers (54) each sized to receive and hold a single sachet of wet or dry feed material.

3. Dispensing apparatus as claimed in claim 2 wherein each holding chamber is defined between a pair of aligned partitions (52).

4. Dispensing apparatus as claimed in claim 1 wherein the storage section comprises at least one holding chamber (18) sized to receive and retain a plurality of sachets (20) of wet or dry feed material.

5. Dispensing apparatus as claimed in any one of claims 1 to 3 wherein the floor (25) of the storage section is inclined towards a discharge opening (30) formed in said floor to

enable sealed sachets to move in turn to the sachet opening section (14) of the apparatus.

6. Dispensing apparatus as claimed in claim 4 wherein the discharge opening (30) is closed by a cover which is opened on demand to enable a sachet to pass from the storage section to the sachet opening section of the apparatus.

7. Dispensing apparatus as claimed in any one of the preceding claims wherein the opening station includes a cutting tool (34) in the form of a generally horizontal blade movable towards and into contact with an end surface of a sachet (20) positioned in the sachet opening section (14).

8. Dispensing apparatus as claimed in claim 6 wherein the blade includes at least one inclined surface (38).

9. Dispensing apparatus as claimed in any one of the preceding claims further comprising means for applying pressure (42) to each said sachet once opened to remove its content and to transfer said content to said discharge station (16).

10. Dispensing apparatus as claimed in claim 8 wherein the means for applying pressure to each said sachet comprises a roller (42) movable over an exposed surface of an opened sachet.

11. Dispensing apparatus as claimed in claim 9 wherein the roller is supported between articulated side arms (44).

12. Dispensing apparatus as claimed in any one of the preceding claims wherein the means for moving said sachets along said storage chamber is operated through a switch located on the apparatus.

13. Dispensing apparatus as claimed in any one of claims 1 to 10 wherein the means for moving said sachets along said storage chamber operates in response to a timing mechanism of the apparatus.

14. Dispensing apparatus as claimed in any one of claims 1 to 10 wherein the means for moving said sachets along said storage chamber operates remotely through an electronic signal.

15. Dispensing apparatus as claimed in any one of the preceding claims wherein a holding chamber (56) is positioned above the dispensing apparatus for retaining additional sachets (62) of wet or dry material, means being provided automatically to transfer said additional sachets to said dispensing chamber when the dispensing chamber is empty of sachets.

16. Dispensing apparatus as claimed in claim 1 wherein the storage apparatus comprises an assembly comprising a vertical array of shelves (78) each sized to receive a single sachet of wet or dry feed material and means for removing such sachets individually from said assembly and transporting each said sachet to said sachet opening section of the apparatus.

17. Dispensing apparatus as claimed in claim 16 wherein the means for removing said sachets from said assembly comprises a lifting tray (82) movable to positions alongside and below a selected shelf (78) to effect transfer of the respective sachet to said sachet opening section of the apparatus.

18. Dispensing apparatus as claimed in claim 6 wherein each sachet is retained within a cassette (70) which includes a tray-shaped base (72) and a lid (74), the cassette further including a rotatable arm (76) located at one side of the base and formed with a slot for receiving one end of a sachet positioned in the cassette and a cutting tool for removing the end of the sachet remote from the rotatable arm, said arm being rotatable to wind the cassette about the arm to effect removal of the sachet contents and to deposit such contents onto the tray-shaped base of the cassette.

19. Dispensing apparatus able on demand or at pre-set times to dispense wet or dry animal feed retained within sealed sachets (20) from a storage section to a discharge station (16) of the apparatus, said storage section comprising an assembly of holding members each able to receive and retain one said sachet, said apparatus further comprising means for removing each sachet in turn from said assembly of holding members and for transferring each such removed sachet to an opening section at which it is opened and its contents transferred to a discharge station of the apparatus.

20. Dispensing apparatus able on demand or at pre-set times to dispense wet or dry flowable feed initially retained within sealed sachets from a storage station to a discharge station of the apparatus, said dispensing apparatus comprising means for moving said stored sachets incrementally from said storage station to a sachet opening station which includes means for opening each sachet in turn and means for applying pressure to each opened sachet to cause its contents to flow to said discharge station of the apparatus.

21. Dispensing apparatus as claimed in claim 20 wherein the means for moving said sachets or discrete portions along said storage chamber is operated through a switch located on the apparatus, or in response to a timing mechanism of the apparatus, or remotely through an electronic signal.

22. Dispensing apparatus as claimed in claim 20 or 21 wherein a holding station is positioned above the storage station of the dispensing apparatus for retaining additional sachets of wet or dry material, means being provided automatically to transfer said additional sachets from said holding station to said storage station when the storage station is empty of sachets or wet or dry material.

23. Dispensing apparatus as claimed in any one of claims 20 to 22 wherein means are provided to initiate operation of the dispensing apparatus remotely through a mobile telephone, or a laptop or a webcam/treat upgrade or automatically at selected times.

24. Dispensing apparatus able on demand or at pre-set times to dispense sealed sachets of wet or dry flowable feedstuff from a storage area of the apparatus to a discharge area of said apparatus, the apparatus comprising an assembly of holding stations each able to receive and store one said sachet, means for moving said assembly step-wise towards said discharge area whereby each said holding station is moved in turn to said discharge area, means for enabling a sachet positioned in said discharge area to leave its holding station and means for opening each said sachet and discharging its contents through an outlet of the apparatus.

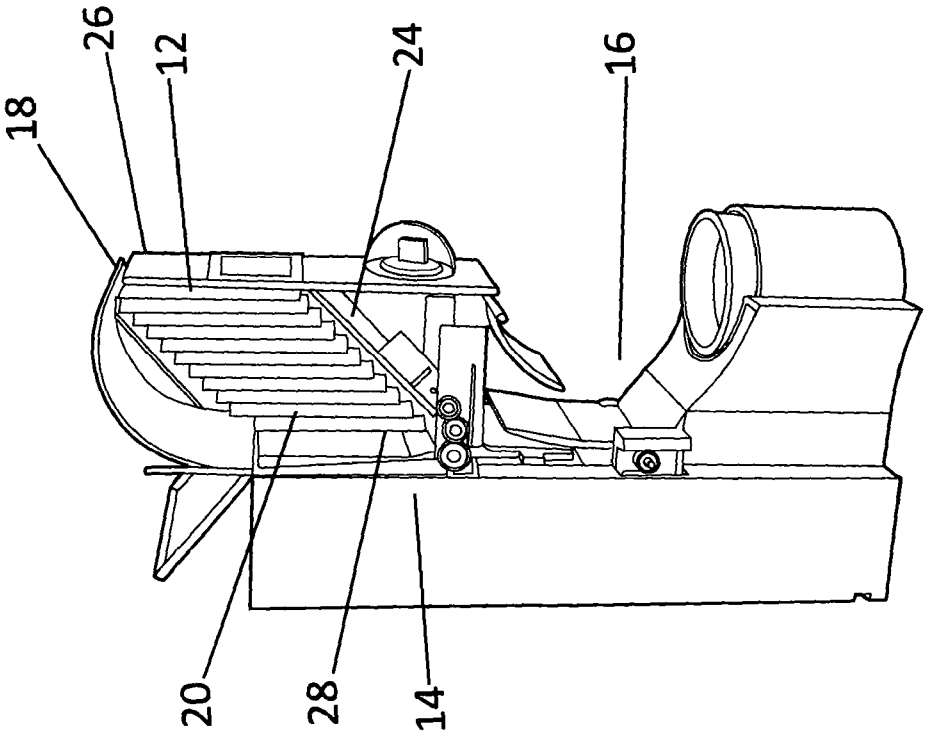

Fig. 2

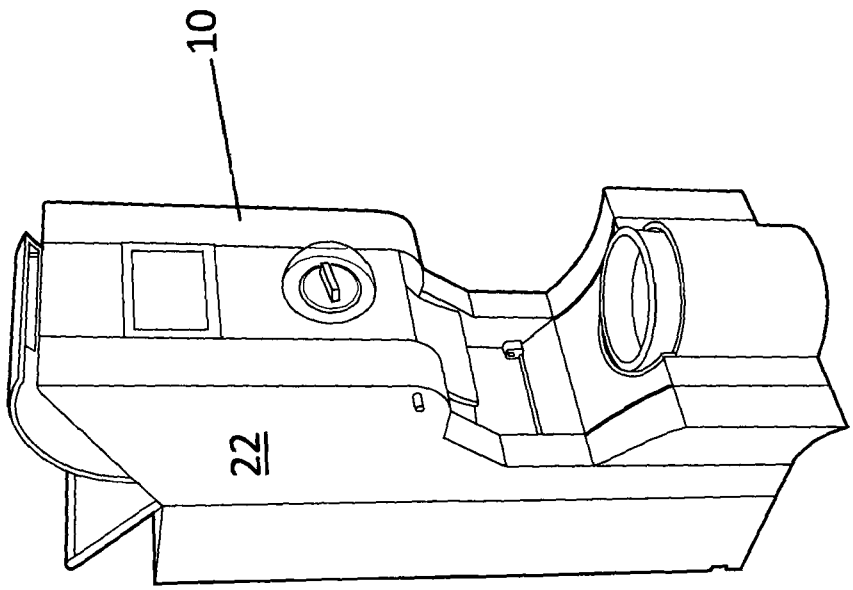

Fig. 1

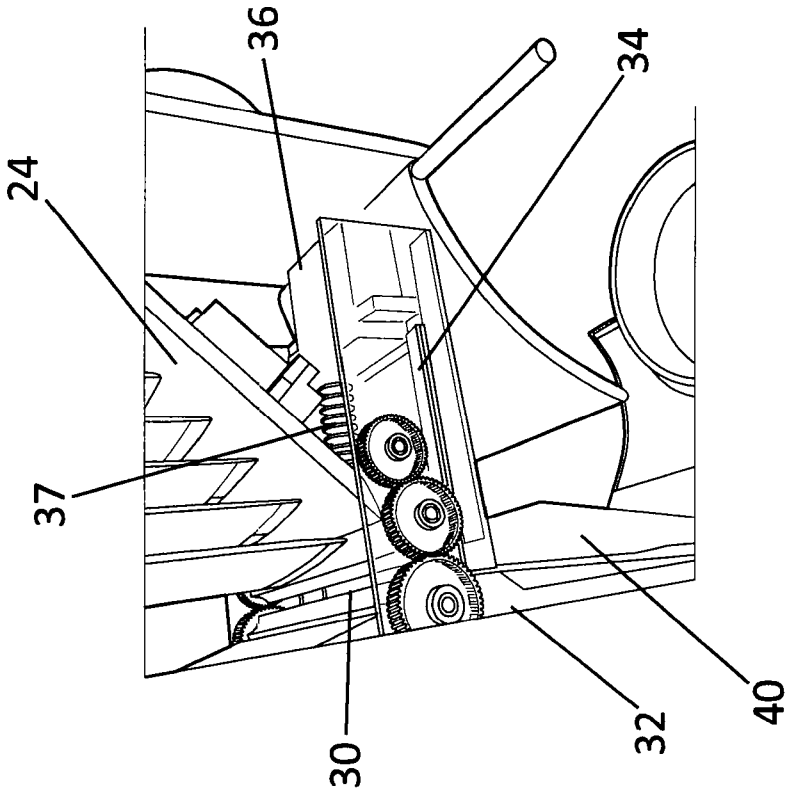

Fig. 4

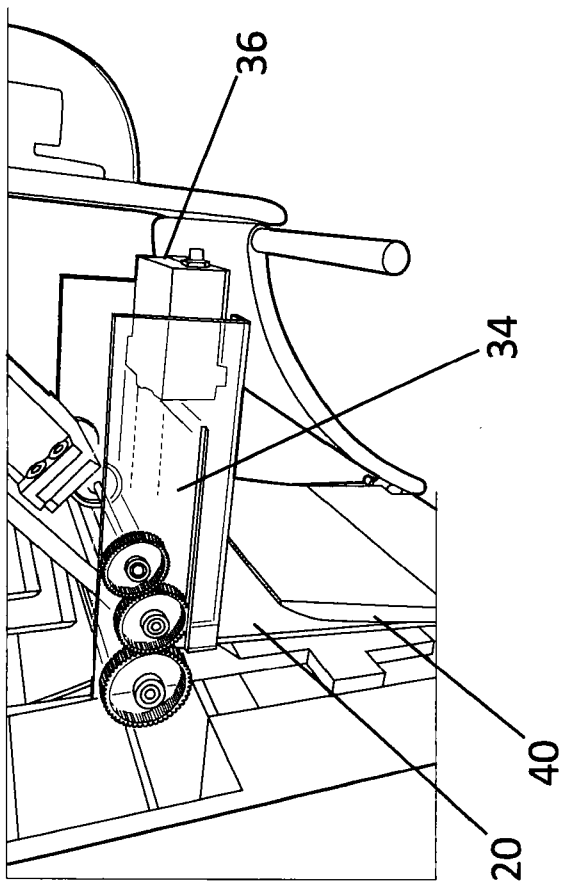

Fig. 3

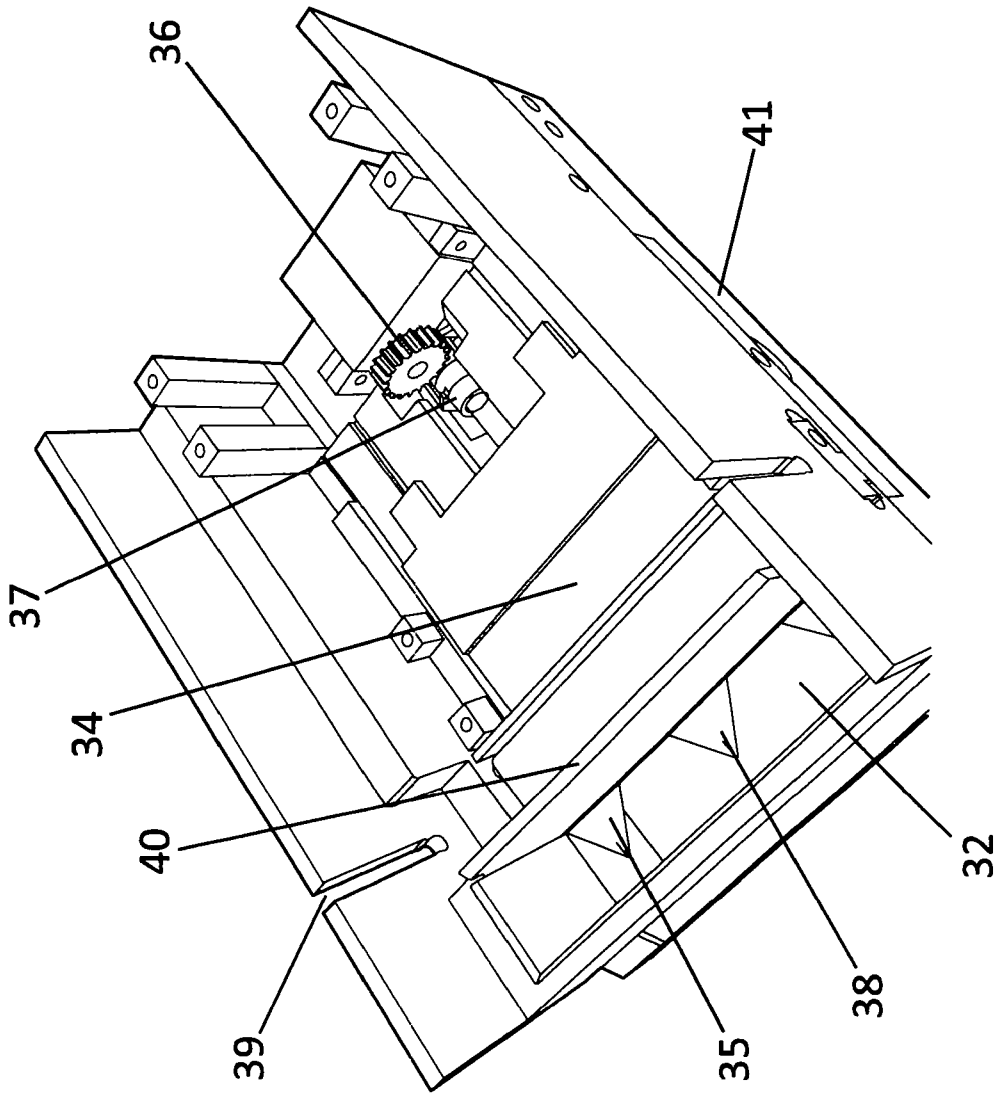

Fig. 5

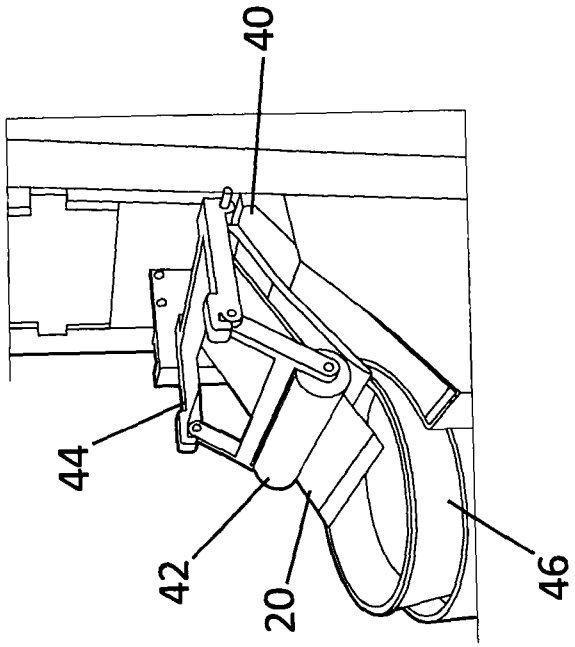

Fig. 7

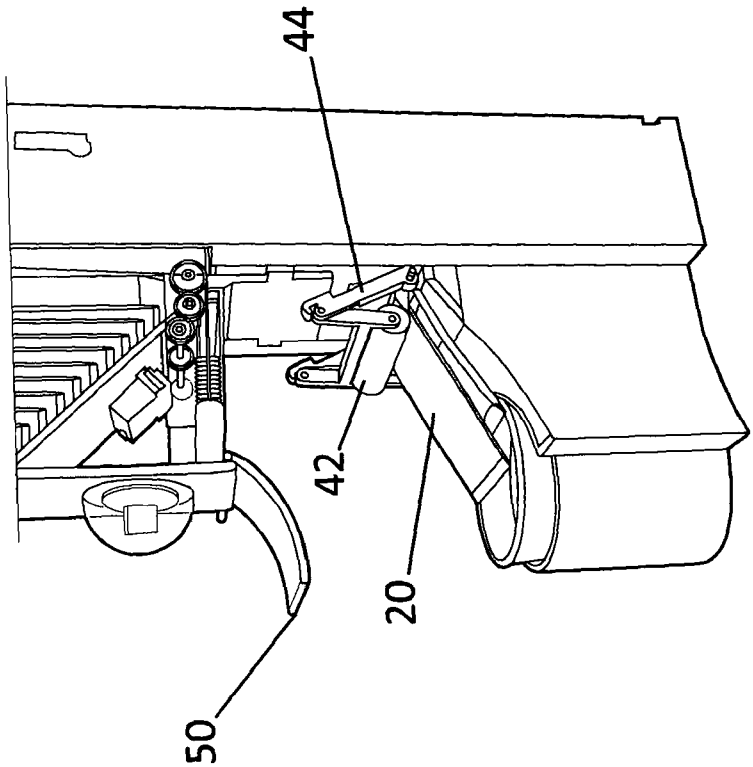

Fig. 6

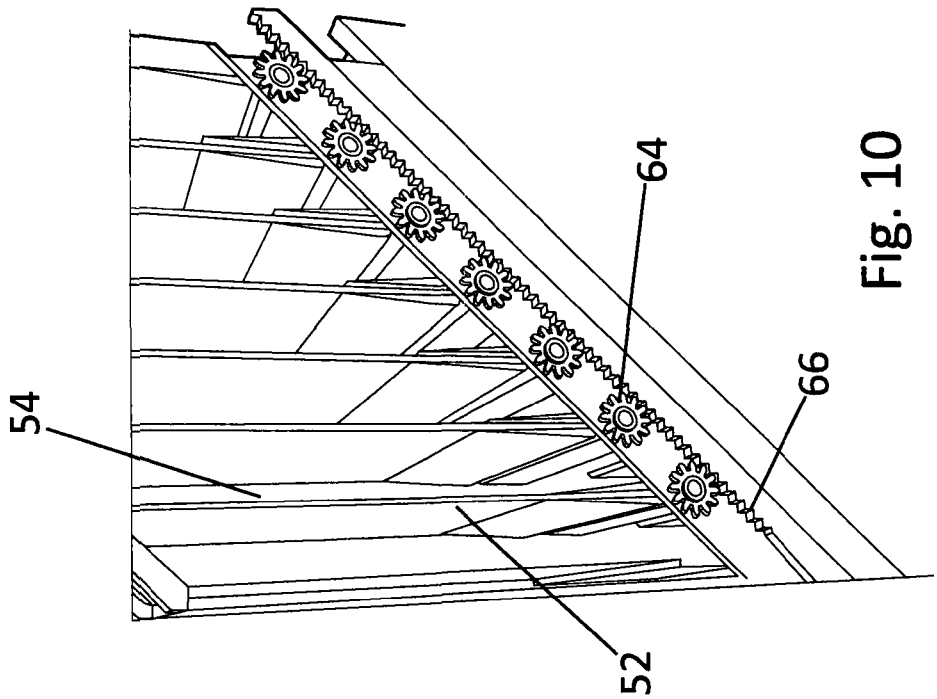

Fig. 10

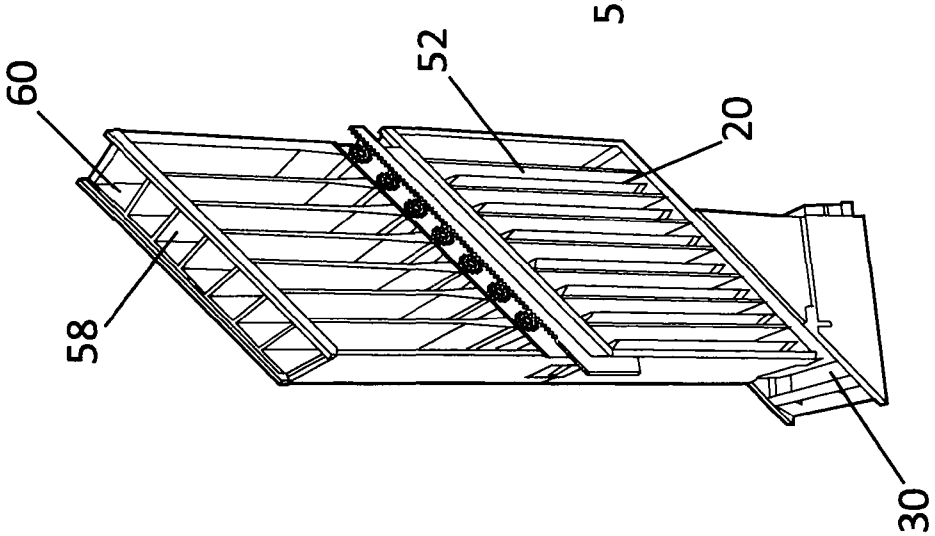

Fig. 9

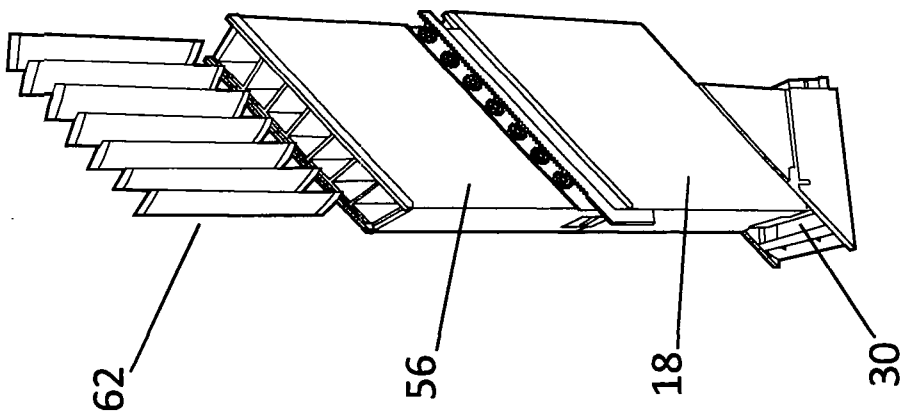

Fig. 8

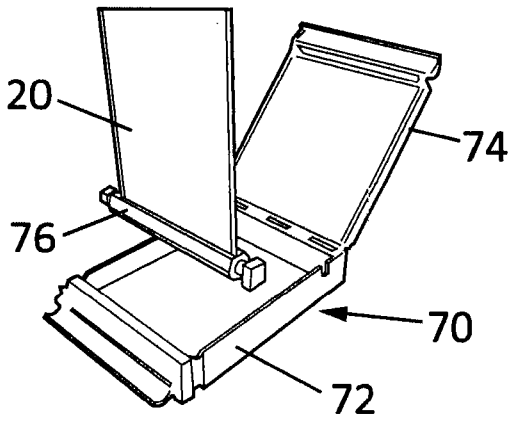

Fig. 11

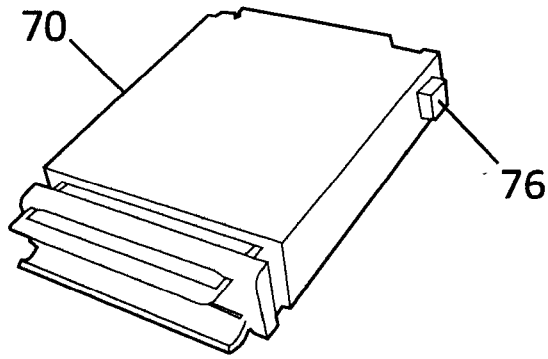

Fig. 12

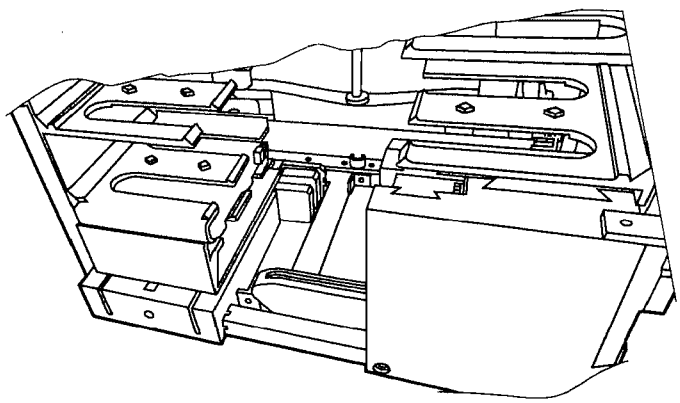

Fig. 14

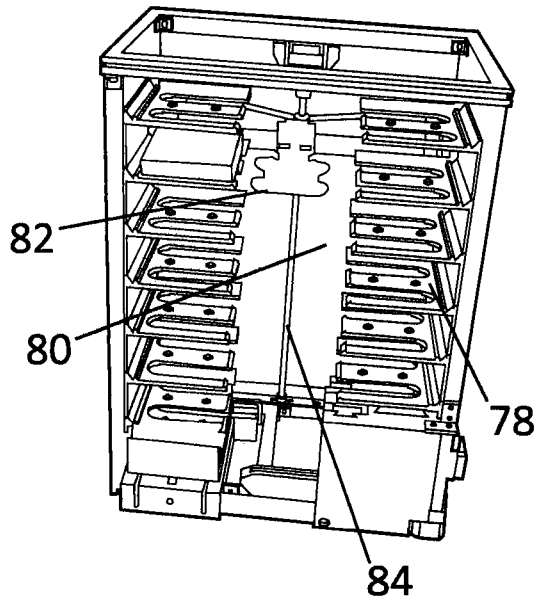

Fig. 13

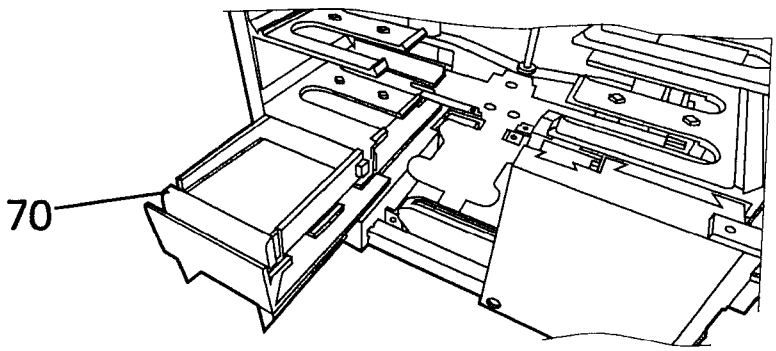

Fig. 15

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2018/000087

A. CLASSIFICATION OF SUBJECT MATTER
INV. A01K5/01 A01K5/02 B65B69/00
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)
A01K B65B

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	US 2015/053138 A1 (RAMSEY DAVID [US] ET AL) 26 February 2015 (2015-02-26) paragraph [0010] - paragraph [0043] figures 1,2,3A	1-16
X	US 2017/099803 A1 (NEIGHBORS CONNOR [US]) 13 April 2017 (2017-04-13) paragraph [0012] - paragraph [0069] figures 1-3	1-14,16, 17
X	WO 2016/088092 A1 (FEDELI BENEDETTO [MC]) 9 June 2016 (2016-06-09) page 1, line 7 - line 14 page 3, line 10 - page 19, line 6 figures 1-14	1-4,9, 10, 12-14,18

☐ 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	Date of mailing of the international search report
5 November 2018	12/11/2018

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Millward, Richard

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2018/000087

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 19-24
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 19-24

In response to the Invitation to provide informal clarification, the applicant indicated that claim 1 should be made the subject of search. Consequently, the search is limited to the subject-matter of claim 1 and its dependent claims. Claims 19-24 are not searched.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2018/000087

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2015053138 A1	26-02-2015	NONE	
US 2017099803 A1	13-04-2017	NONE	
WO 2016088092 A1	09-06-2016	EP 3226680 A1	11-10-2017
		WO 2016088092 A1	09-06-2016