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(54) **A SECURITY UNIT FOR TRANSPORTING ROLLS OF COINS FOR A MACHINE DISPENSING ROLLS COINS**

(57) Described is a security unit (1) for transporting rolls of coins for a machine (100) for dispensing rolls of coins comprising a containment body (2) configured to be associated with a machine (100) for dispensing rolls of coins and defining a containment space (V) designed to contain a plurality of rolls of coins stacked on each other. In particular, the containment body (2) has an inlet portion (3) having an inlet opening (4) designed to allow the insertion of the plurality of rolls of coins and an outlet portion (5) having an outlet opening (6) designed to allow the outflow of the rolls of coins. The unit (1) also comprises first closing means (11) and second closing means (12) associated, respectively, with the inlet portion (3) and the outlet portion (5) to allow and/or prevent the passage of said rolls of coins. The first and said second closing means (11, 12) can be configured at least in an open condition in which they allow a passage of the rolls respectively from the inlet opening (4) and/or from the outlet opening (6) and at least in a closed condition wherein the first closing means (11) and the second closing means (12) close respectively the inlet opening (4) and/or the outlet opening (6) for preventing the passage of the rolls of coins. Moreover, the second closing means (12) can be activated by a respective portion of the machine (101) for dispensing rolls of coins to define a passage of the second closing means (12) between the closed condition and the open condition.

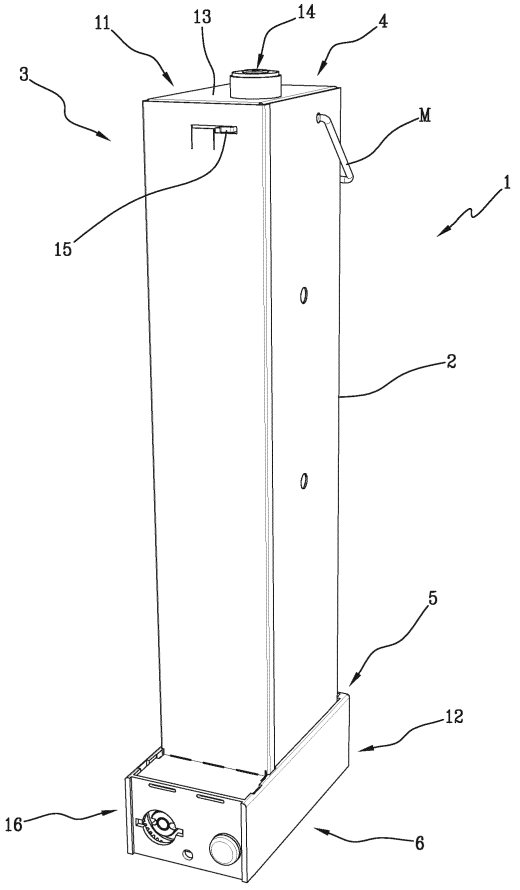

Fig.1

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Description

[0001] This invention relates to a security unit for transporting roils of coins for a machine for dispensing rolls of coins and a relative machine for dispensing rolls of coins.

[0002] The invention relates to the technical field of automatic machines for dispensing money.

[0003] In particular, the invention can be widely applied in Cash Exchange Machines (CEM).

[0004] Automatic machines currently exist which allow the dispensing of coins of various values in such a way as to allow the user to change paper money into coins in order to purchase goods or services using machines such as parking meters, automatic dispensers for drinks, food or cigarettes or slot machines which typically require payment in coins.

[0005] In particular, these machines have suitable housings designed to contain the rolls of coins to be distributed and followed by the transaction.

[0006] These housings are periodically filled by a special operator to guarantee the availability of the coins of various values.

[0007] Disadvantageously, during the operation for filling the dispenser the operator must manually insert each roll of coins inside the specific housing.

[0008] This operation may therefore be particularly lengthy, significantly affecting the costs of maintaining the plants.

[0009] Moreover, the manual insertion of the rolls in the suitable housings is an operation subject to the human error by the operator who can accidentally insert the rolls of coins of a particular value in the housings designed for different values.

[0010] Moreover, during manual insertion of the rolls one or more rolls may accidentally, as they are fed by gravity from above, become trapped and therefore occlude the entire housing.

[0011] Disadvantageously, moreover, the operations for transporting and inserting rolls of coins in the dispensing machine can lead to several drawbacks, for example the loss or theft of the rolls of coins. This may be at the expense of the operator who is responsible for guaranteeing delivery of the entire amount of money.

[0012] In this context, the technical purpose which forms the basis of the invention is to provide a security unit for transporting rolls of coins for a machine for dispensing rolls of coins and a relative machine for dispensing rolls of coins which overcome the above-mentioned drawbacks of the prior art.

[0013] In particular, the aim of the invention is to provide a security unit for transporting rolls of coins for a machine for dispensing rolls of coins which is able to render more efficient the operations for introducing money in the machine for dispensing rolls of coins.

[0014] A further aim of this invention is to provide a security unit for transporting rolls of coins for a machine for dispensing rolls of coins which is able to increase the security of transporting of the money to the dispensing machines.

[0015] The technical purpose indicated and the aims specified are substantially achieved by a security unit for transporting rolls of coins for a machine for dispensing rolls of coins and a relative machine for dispensing rolls of coins, comprising the technical features described in one or more of the appended claims.

[0016] Further features and advantages of the invention are more apparent in the detailed description below, with reference to a preferred, non-limiting, embodiment of a security unit for transporting rolls of coins for a machine for dispensing rolls of coins and a relative machine for dispensing rolls of coins, as illustrated in the accompanying drawings, in which:

- Figure 1 is a perspective view of a security unit for transporting rolls of coins for a machine for dispensing rolls of coins according to the invention;
- Figure 2 is an exploded view of the security unit for transporting rolls of coins for a machine for dispensing rolls of coins of Figure 1;
- Figure 3 is an enlarged detail of a portion of the security unit for transporting rolls of coins for a machine for dispensing rolls of coins of Figure 1;

Figure 4 is a cross section view of the detail of Figure 3 along a longitudinal plane;

- Figure 5 is a perspective view of a machine for dispensing rolls of coins according to a further inventive concept of the invention.

[0017] With reference to the accompanying drawings, the numeral 1 denotes a security unit for transporting rolls of coins for a machine for dispensing rolls of coins in accordance with the inventive concept of the invention, which will hereafter be referred to as unit 1.

[0018] The unit 1 comprises a containment body 2 defining a containment space "V" designed to contain a plurality of rolls of coins, preferably stacked on each other.

[0019] More specifically, the containment body 2 is configured to be associated with a machine 100 for dispensing rolls of coins in such a way as to provide the dispensing machine 100 with a predetermined quantity of rolls of coins to be dispensed.

[0020] In other words, the containment body 2 is configured for housing a predetermined quantity of rolls of coins designed to be dispensed by the above-mentioned dispensing machine 100.

[0021] As illustrated in the accompanying drawings, the unit 1 may comprise a handle "M" which can be gripped by a user for simplifying the operations for transporting and connecting to the dispensing machine 100. Advantageously, the unit 1 may be configured as a tubular loader of the quick-assembly type.

[0022] Moreover, preferably, the unit 1 may be configured as a tubular loader preloaded with a plurality of rolls of coins stacked on top of each other in one or more stacks.

[0023] In this way, the unit 1 allows the time for loading the coins on the machine to be reduced, contributing to reducing the costs for maintaining the respective dispensing machines to a faster and more intuitive loading of the machine by the operator.

[0024] As illustrated in the accompanying drawings, the containment body 2 has an inlet portion 3 having an inlet opening 4 designed to allow the insertion of the above-mentioned plurality of rolls of coins inside the containment space "V".

[0025] The containment body 2 also has an outlet portion 5 having an outlet opening 6 designed to allow the escape of the rolls of coins in such a way that they can be dispensed by the dispensing machine 100.

[0026] According to a possible embodiment not illustrated in the accompanying drawings, the inlet portion 3 and, preferably, the inlet opening 4 coincide, respectively, with the outlet portion 5 and, preferably, the outlet opening 6. In other words, the containment body 2 may have a single passage designed to allow the insertion and/or the escape of the rolls of coins. Advantageously, the containment body 2 may have at least one stacking channel 7 for the rolls of coins n such a way as to favour the operations for storing the rolls of coins.

[0027] In particular, the stacking channel extends between the inlet and outlet openings 4, 6.

[0028] In other words, the stacking channel 7 allows the rolls of coins to be positioned in such a way as to form a vertical stack which promotes the movement by gravity of the rolls from the inlet opening 4 to the outlet opening 6.

[0029] According to a possible embodiment and as illustrated in the accompanying drawings, the containment body 2 defines internally two stacking channels 7 positioned side by side in such a way as to increase the number of rolls of coins housed, thus limiting the axial dimensions of the unit 1.

[0030] Advantageously, the stacking channels 7 may be separated from each other by a separator baffle 8 which favours the movement of the rolls of coins, preventing mutual sliding between rolls of coins positioned on adjoining stacks.

[0031] Preferably, the stacking channel 7 comprises two opposite walls 9 defining respective sliding guides 10 configured to receive and guide respective ends of each roll of coins.

[0032] In particular, the guides 10 can be defined by portions substantially with a "C" shape or by parallel ribs defining between them a guide channel for a respective end of each respective roll of coins.

[0033] According to further possible embodiments, the guides 10 may be made in one piece with the containment body 2 and/or have a shape different from that described above without altering the inventive concept which forms the basis of the invention.

[0034] According to an embodiment not illustrated, each stacking channel 7 may have, on the above-mentioned opposite walls 9, two or more sliding guides 10 alongside each other to favour the stacking of the rolls of coins in such a way as to make, for each stacking channel 7, two or more stacks of rolls of coins alongside each other.

[0035] For example, the sliding guides 10 of a same stacking channel 7 may be defined by longitudinal guide ribs positioned on opposite walls and defining two housings positioned side by side for respective end portions of the rolls.

[0036] In this way, the unit 1 allows a large quantity of rolls of coins to be stored, keeping the axial dimensions limited in such a way as to allow an easy transport and connection to the dispensing machine 100.

[0037] The unit 1 also comprises first closing means 11 and second closing means 12 associated, respectively, with the inlet portion 3 and the outlet portion 5 to allow and/or prevent the passage of the rolls of coins. Advantageously, the above-mentioned first and second closing means 11, 12 can be configured at least in an open condition wherein they allow a passage of the rolls respectively from the inlet opening 4 and/or from the outlet opening 6 and at least in a closed condition wherein the first closing means 11 and the second closing means 12 close, respectively, the inlet opening 4 and/or the outlet opening 6 to prevent the passage of the rolls of coins.

[0038] In this way, the closing means 11, 12 can prevent the passage of the rolls from the openings 4, 6 of the containment body 2, guaranteeing a high level of security during transportation of the coins.

[0039] According to a possible embodiment, the unit 1 may comprise at least one electric motor configured to activate the opening and/or closing of the closing means.

[0040] Moreover, the unit 1 may comprise electrical contacts of different types connected to the electric motor and configured to allow the activation of the electric motor from the dispensing machine after the assembly of the unit 1 on the dispensing machine 100.

[0041] Preferably, the first closing means 11 comprise a removable closing element 13, for example a panel or a door equipped with a lock 14.

[0042] In particular, the closing element 13 is associated with the inlet portion 3 to allow a closing of the inlet opening 4.

[0043] As illustrated in the accompanying drawings, the first closing means 11 may comprise a locking tab 15 operatively connected to the lock 14.

[0044] The locking tab 15 is configured for engaging a respective slot made in the containment body 2 during a closed condition of the first closing means 11 to prevent the movement of the closing element 13.

[0045] According to a possible embodiment, the closing element 13 may be applied to the containment body 2 by means of at least one indicator element, for example a seal or an anti-tampering tab, configured to undergo irreversible and visually noticeable damage in the case of tampering or removal of the closing element 13.

[0046] The second closing means 12 are associated with the outlet portion 5 to allow or prevent the passage

of the rolls of coins through the outlet opening 6.

[0047] In particular, the second closing means 12 can be activated by a respective portion of the machine 100 for dispensing rolls of coins to define a passage of the second closing means 12 between the closed condition and the open condition.

[0048] Advantageously, the unit 1 may comprise at least one protective cover 16 applied to the above-mentioned second closing means 12 and configured to make the second closing means 12 activatable in a mechanised manner by the dispensing machine 100 but not by an operator.

[0049] In this way, the second opening means 12 can be activated only after the coupling with the dispensing machine 100, thus guaranteeing a high level of security for the operations for transporting the money.

[0050] According to a possible embodiment and as illustrated in the accompanying drawings, the unit 1 comprises a dispensing portion 17 associated with the outlet portion 5.

[0051] The dispensing portion 17 comprises, for each stack of rolls of coins, a respective movable stop element 18 which can be operated by the dispensing machine 100 for enabling or preventing the dispensing of the roll of lower coins of the respective stack.

[0052] Preferably, the movable stop element 18 is rotatable about an operating axis in such a way that the rotation causes a roll of coins to be dispensed. The movable stop element 18 has, preferably, a curved shape for stably housing a lower portion of the roll of lower coins of the respective stack.

[0053] In other words, the movable stop element 18 is positioned at the base of the stack of rolls of coins close to the outlet opening 6 and is configured to define a housing for at least one roll of coins during the dispensing step of the machine.

[0054] The curved shape of the movable stop element 18 gives it a cup-like shape which is able to at least partly enclose a lower portion of a roll of coins.

[0055] The movable stop element 18 is reversibly rotatable between a receiving configuration (left element 18 in Figure 3), wherein the housing faces towards the stack of rolls of coins to receive a roll of coins in such a way that the lower roll of coins is deposited by gravity inside the movable stop element 18, and a release configuration (right element 18 in Figure 3) wherein the housing is at least partly rotated, and in particular turned downwards, to release the above-mentioned roll in a specific collecting space of the dispensing machine 100.

[0056] Preferably, the dispensing portion 17 comprises at least one rotatable element 19 connected to the movable stop element 18 and configured to promote a movement of the movable stop element 18 between the receiving configuration and the release configuration.

[0057] Preferably, the rotatable element 19 is operatively meshed with a corresponding operating element (not illustrated) of the dispensing machine when the unit 1 is applied to the above-mentioned dispensing machine 100.

[0058] As illustrated in the accompanying drawings, the rotatable element 19 may be made in the form of a gear wheel rotatable by the dispensing machine 100 for determining the above-mentioned movement.

[0059] Preferably, the protective cover 16 limits the accessibility to the gear wheel making the activation possible only after the coupling of the unit 1 with the dispensing machine 100.

[0060] In this way, the unit 1 increases the security during the transport of the money preventing the accessibility of the gear wheel and, therefore, the possibility of dispensing rolls of coins to the operator.

[0061] Advantageously, the unit 1 may also comprise identification means designed to indicate at least one operating property of the unit 1.

[0062] The identification means can be optically and/or electronically identifiable by an identification device of the machine for dispensing coins.

[0063] Preferably, the identification means comprise at least one radio frequency identification transponder (or tag) (Radio-Frequency Identification - RFID). Purely by way of a non-limiting example, the identification means may allow a monitoring of the positioning of the rolls of coins inside the dispensing machine.

[0064] According to further possible embodiments, the identification means may contain information relative to the quantity and/or relative to the type of coins contained in the unit 1.

[0065] In this way, the identification means can be used by the dispensing machine 100 for monitoring the quantity of coins which can be dispensed and, if necessary, the need for filling.

[0066] Advantageously, the unit 1 may comprise a geolocation device designed to send signals relative to the positioning of the security unit to a remote receiving unit in such a way as to make the unit 1 constantly traceable. According to a further aspect, the invention relates to a machine 100 for dispensing rolls of coins comprising a dispensing unit 101 configured for dispensing a predetermined quantity of rolls of coins and having a receiving seat 102 configured for the removable application of a security unit 1.

[0067] As illustrated in the accompanying drawings, the dispensing machine 100 comprises a depositing portion 103 configured for receiving the rolls of coins after the dispensing of the dispensing machine.

[0068] The dispensing machine 100 also comprises release means configured for activating the above-mentioned second closing means 12 of the unit 1 to define a passage of the second closing means 12 from the closed condition to the open condition.

[0069] In other words, the release means are configured to release the second closing means 12 in such a way as to allow the dispensing of the rolls of coins.

[0070] Moreover, the dispensing machine 100 comprises a control device operatively connected to the dispensing portion 17 and/or to the release means for ena-

bling the dispensing of the rolls of coins on the basis of a preloaded logic.

[0071] Preferably, the dispensing machine also comprises an identification device configured for detecting at least one property of the security unit 1 and sending a signal describing the property to the above-mentioned control device.

[0072] In particular, the identification device is operatively connected to the unit 1 for detecting the operating properties described by the above-mentioned identification means.

[0073] Preferably, the identification device comprises an RFID reader configured for reading the information contained in at least one RFID transponder of the identification means.

[0074] This information allows the dispensing machine 100 to monitor the quantity and/or the type of coins contained in the unit 1.

[0075] Moreover, the above-mentioned information allow the dispensing machine 100 to identify and monitor the positioning of the rolls of coins inside the dispensing machine in such a way that the dispensing unit can dispense rolls of coins in a fast and efficient manner.

[0076] It should be noted, therefore, that the invention achieves the preset aim thanks to a security unit for transporting rolls of coins for a machine for dispensing rolls of coins having a containment body designed to contain a plurality of rolls of coins stacked on each other and which can be associated with a machine for dispensing rolls of coins which is able to make the operations for introducing money in the machine for dispensing rolls of coins more efficient.

[0077] Advantageously, the security unit allows the operations for loading the money in the dispensing machines to be limited only to the connection of the unit to the dispensing machine.

[0078] In particular, during the operation for filling the dispenser the operator connects only the unit to the dispensing machine avoiding the manual insertion of each roll of coins inside the specific housing.

[0079] Advantageously, the rolls of coins are contained inside the containment space of the security unit until the connection of the unit to the dispensing machine, avoiding in this way that some rolls of coins are lost during transport.

[0080] Advantageously, moreover, the unit may have a geo-localizing device, thus further raising the level of security of transporting the money.

Claims

1. A security unit (1) for transporting rolls of coins for a machine (100) dispensing rolls of coins comprising:

- a containment body (2) configured to be associated with a machine (100) for dispensing rolls of coins, said containment body (2) defining a containment space (V) designed to contain a plurality of rolls of coins stacked with one another; wherein said containment body (2) has an inlet portion (3) having an inlet opening (4) designed to allow the insertion of said plurality of rolls of coins and an outlet portion (5) having an outlet opening (6) designed to allow the outflow of said rolls of coins;
- first closing means (11) and second closing means (12) associated, respectively, with said inlet portion (3) and with said outlet portion (5) to allow and/or prevent the passage of said rolls of coins; wherein said first and said second closing means (11, 12) can be configured at least in an open condition in which they allow a passage of said rolls respectively from said inlet opening (4) and/or from said outlet opening (6) and at least in a closed condition wherein said first closing means (11) and second closing means (12) close respectively said inlet opening (4) and/or said outlet opening (6) for preventing the passage of said rolls of coins;

wherein said second closing means (12) can be activated by a respective portion of said machine (101) for dispensing rolls of coins to define a passage of said second closing means (12) between said closed condition and said open condition.

2. The unit according to claim 1, wherein said containment body (2) has at least one stacking channel (7) for said rolls of coins, and wherein said at least one stacking channel (7) extends between said inlet and outlet openings (4, 6).

3. The unit according to claim 1, wherein said inlet portion (3) and, preferably, said inlet opening (4) coincide, respectively, with said outlet portion (5) and, preferably, said outlet opening (6); and wherein said containment body (2) has at least one stacking channel (7) for the rolls of coins.

4. The unit according to claim 2 or 3, wherein said stacking channel (7) comprises two opposite walls (9) defining respective sliding guides (10) configured to receive and guide respective ends of each roll of coins.

5. The unit according to claim 4, wherein said containment body defines internally at least two stacking channels (7) placed side by side, preferably separated from each other by at least one separator baffle (8), and/or wherein said at least one stacking channel has, on said opposite walls (9), two or more sliding guides (10) for the stacking of rolls of coins in accordance with two or more stacks side by side.

6. The unit according to claim 4 or 5, wherein said guides (10) are defined by portions substantially with

a "C" shape or by parallel ribs defining between them a guide channel for a respective end of each respective roll of coins.

7. The unit according to any one of the preceding claims, comprising a dispensing portion (17) associated with said outlet portion (5), said dispensing portion (17) comprising, for each stack of rolls of coins, a respective movable stop element (18), preferably rotatable about an operating axis and yet more preferably having an arched shape for stably housing a lower portion of the lower roll of coins of the respective stack; said movable stop element (18) being operated by said dispensing machine (100) for enabling or preventing the dispensing of the lower roll of coins of the respective stack.

8. The unit according to claim 7, wherein said dispensing portion (17) comprises at least one rotatable element (19), preferably a gear wheel, connected to said movable stop element; said rotatable element (19) being operatively engaged with a corresponding operating element of said dispensing machine (100) when the security unit (1) is applied to said dispensing machine (100).

9. The unit according to any one of the preceding claims, comprising identification means, preferably an RFID transponder, designed to indicate at least one property of said security unit (1), said identification means being optically and/or electronically recognisable by an identification device of said machine (100) for dispensing rolls of coins.

10. The unit according to any one of the preceding claims, comprising a geolocation device designed to send signals relating to the positioning of said security unit (1) to a remote receiving unit.

11. The unit according to any one of the preceding claims, wherein said first closing means (11) comprise a removable closing element (13), in particular a panel or door equipped with a lock (14), applied to said containment body (2) by at least one indicator element, in particular a seal or an anti-burglary tab, configured to undergo an irreversible damage and visually observable in the case of tampering or removal of the closing element (13).

12. The unit according to any one of the preceding claims, also comprising at least one protective cover (16) applied to said second closing means (12) and configured to render said second closing means (12) activatable in a mechanised manner by said dispensing machine (100) but not manually, preferably exclusively by said dispensing machine (100).

13. The unit according to any one of the preceding claims, configured as a tubular loader preferably of the quick assembly type.

14. The unit according to any one of claims 1 to 12, configured as a tubular loader preloaded with a plurality of rolls of coins stacked with each other in one or more stacks.

15. A machine (100) for dispensing rolls of coins comprising:

- a dispensing unit (101) configured for dispensing a predetermined quantity of rolls of coins and having a receiving seat (102) configured for the removable application of a security unit (1) according to any one of the preceding claims;
- release means configured for activating said second closing means (12) of the security unit (1) to define a passage of said second closing means (12) from the closed condition to the open condition;
- a control device operatively connected to said dispensing unit (101) and/or to said release means for enabling the dispensing of the rolls of coins on the basis of a preloaded logic.

16. The dispensing machine according to claim 15, also comprising an identification device configured for detecting at least one property of the security unit and sending a descriptive signal of said property to said control device.

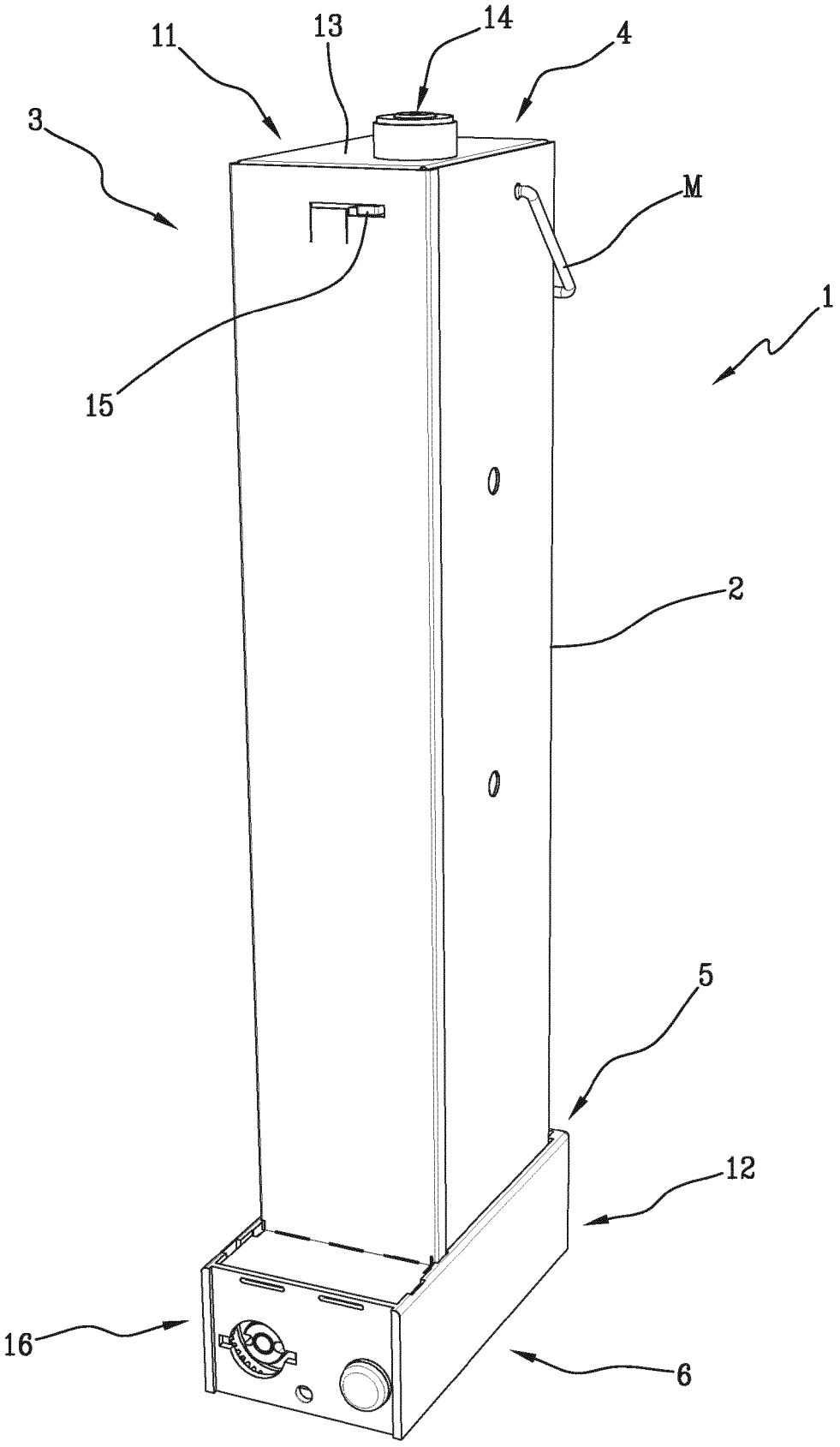


Fig.1

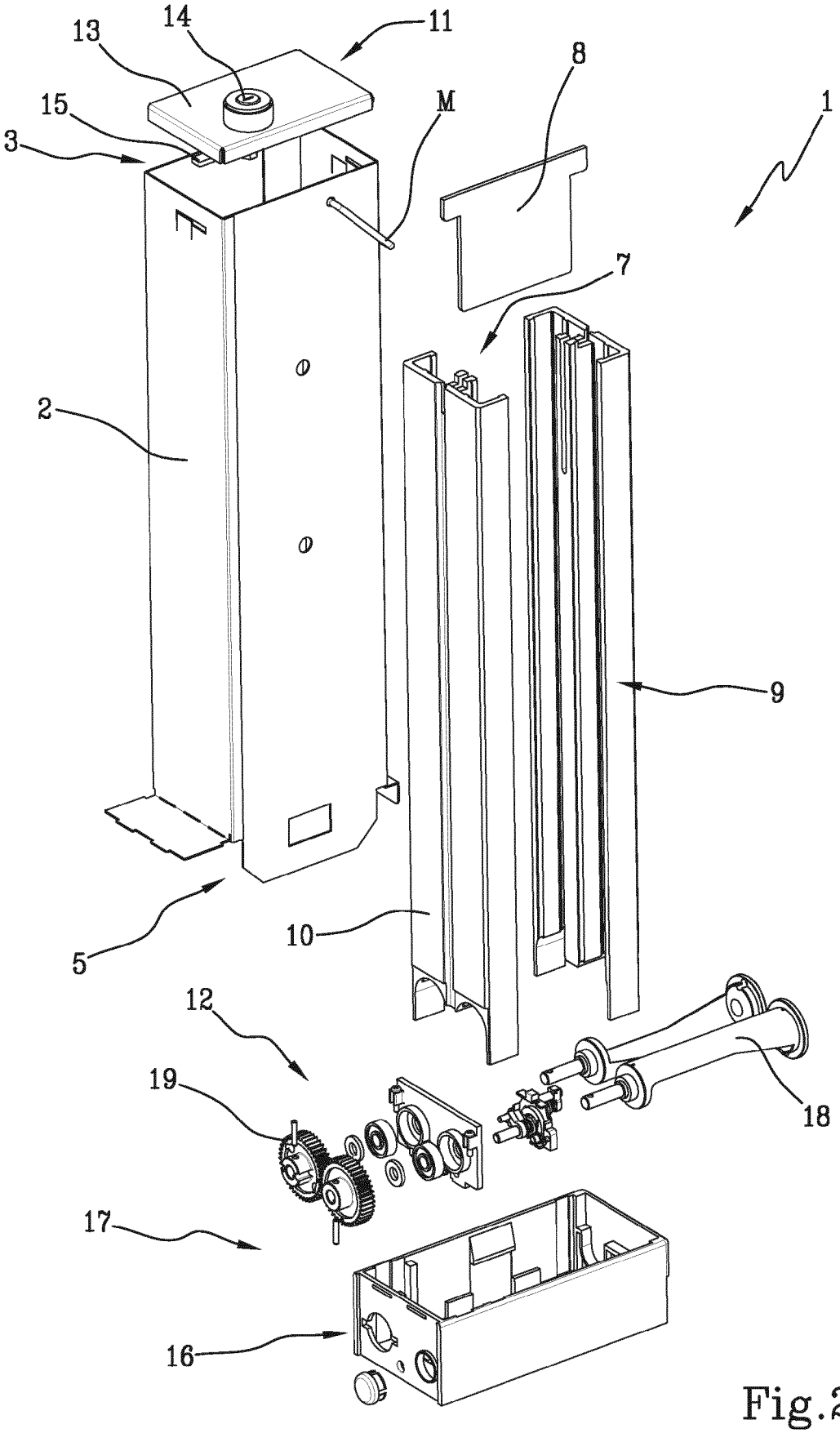


Fig.2

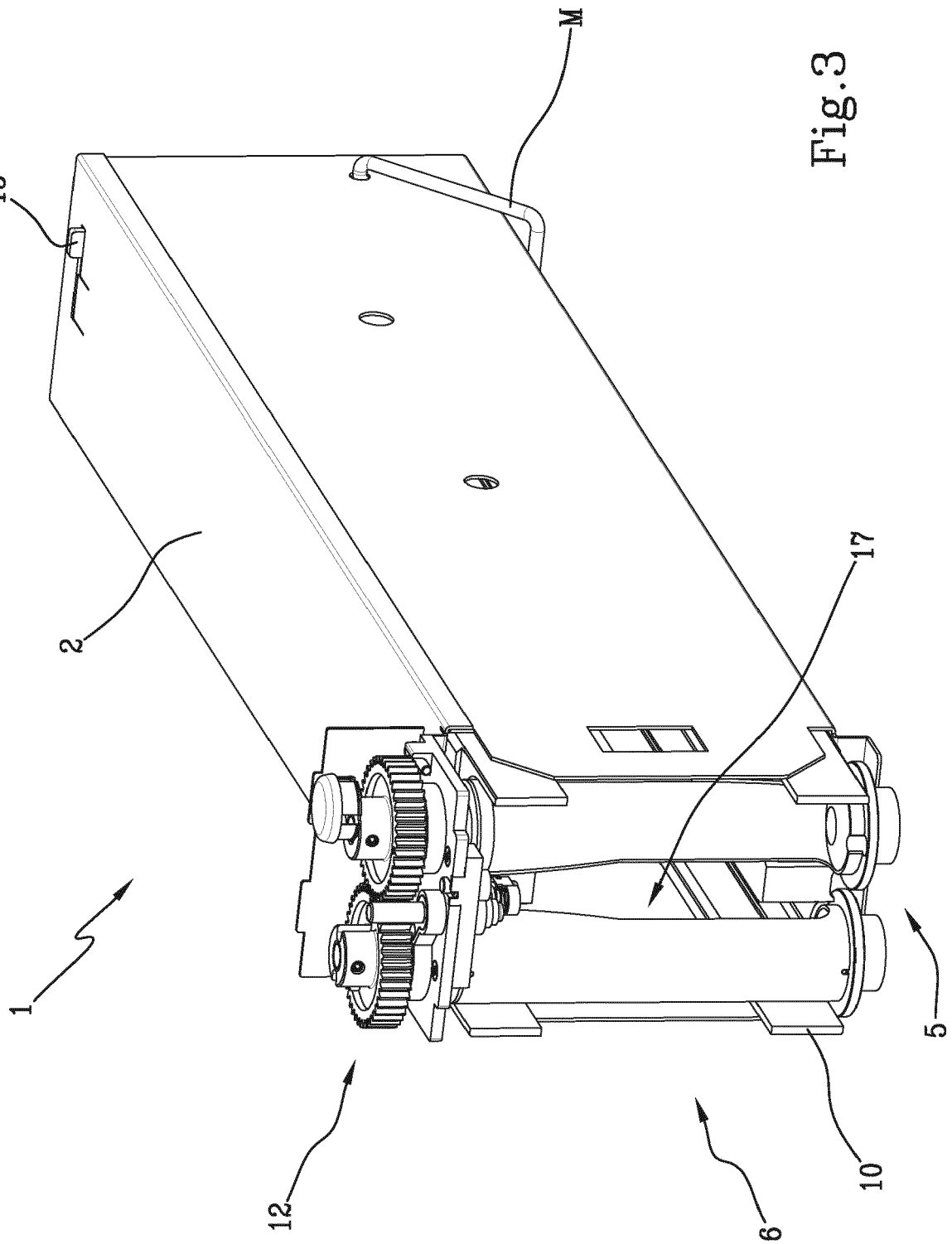


Fig.3

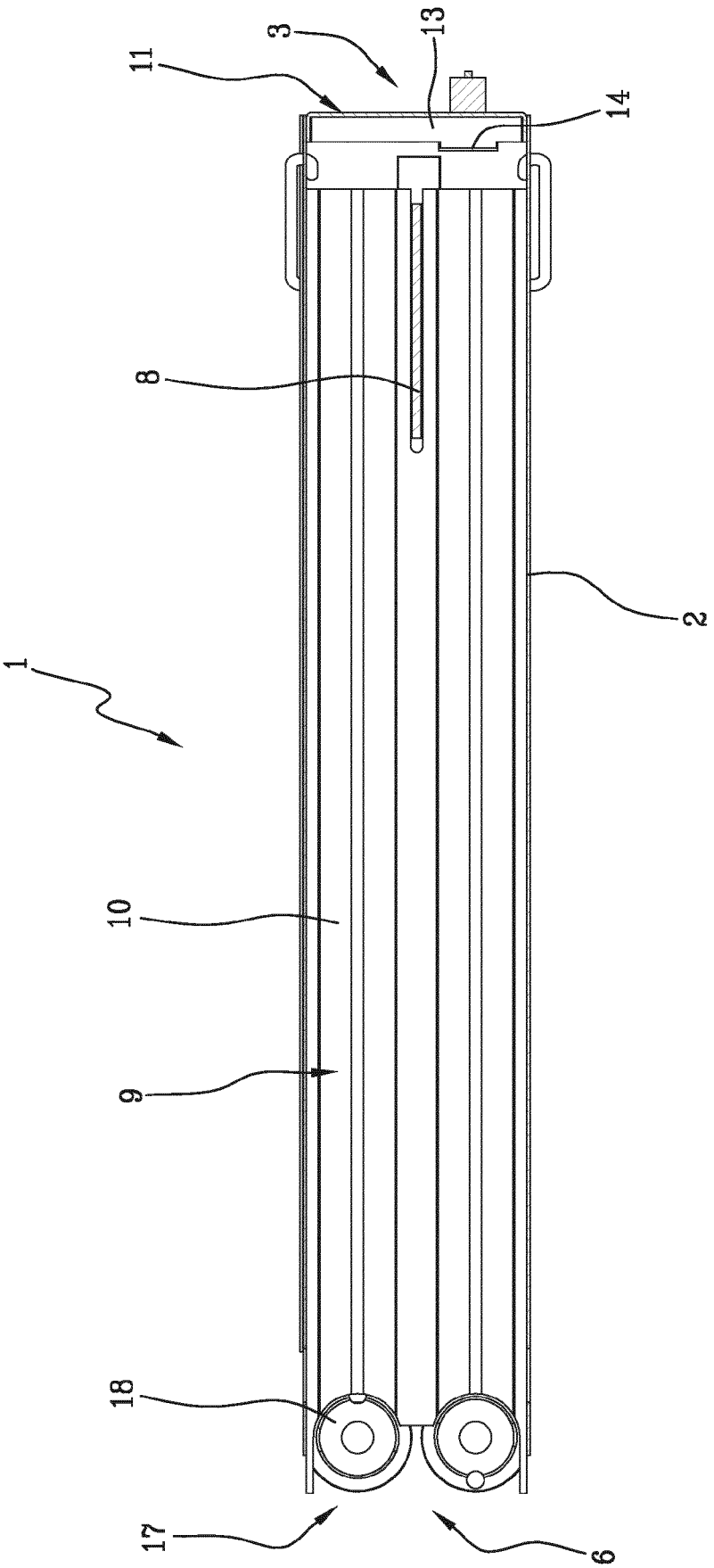
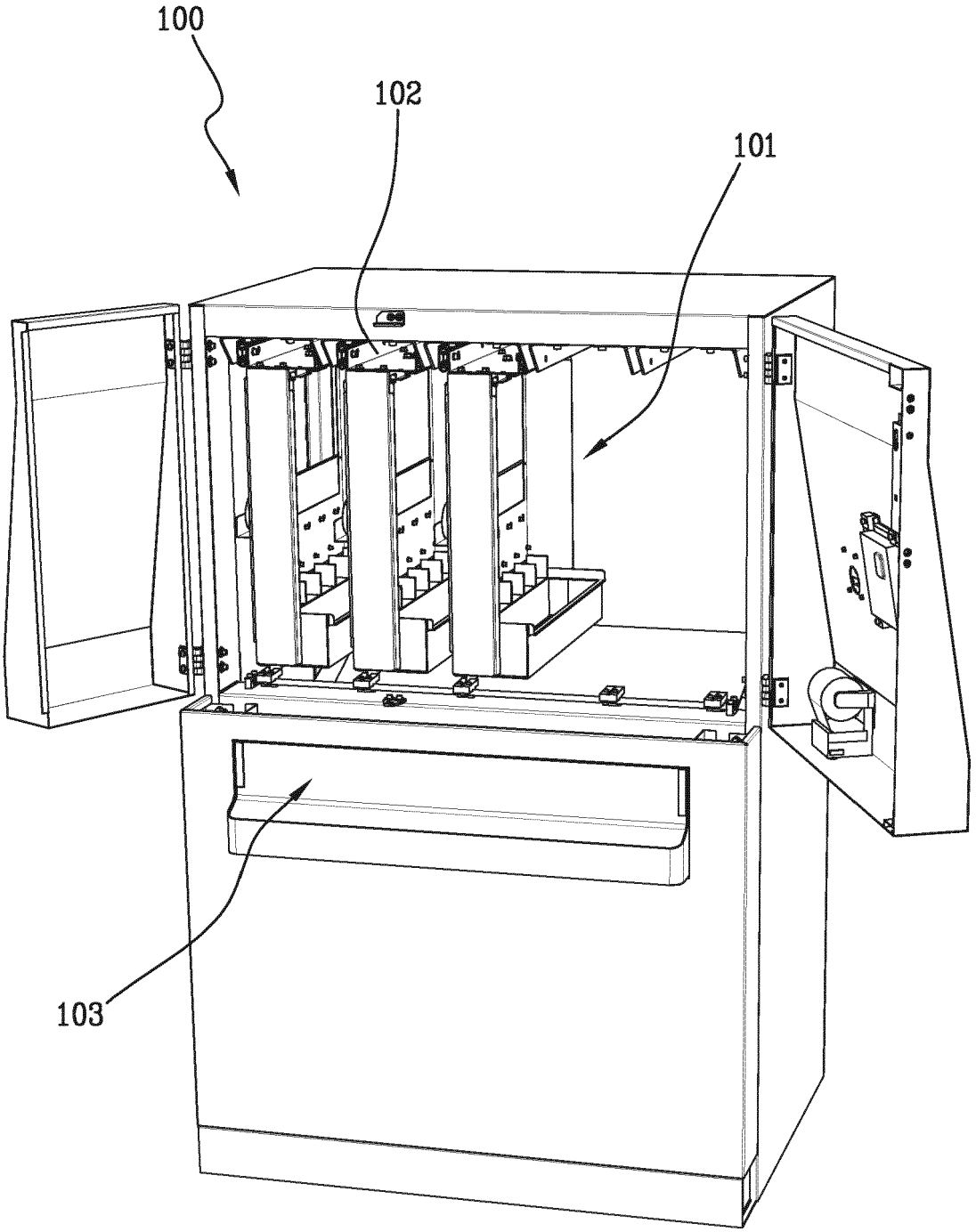


Fig.4

Fig.5



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EUROPEAN SEARCH REPORT

Application Number
EP 20 17 3083

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 966 304 A (KELLY EDWARD C [US]) 30 October 1990 (1990-10-30) * abstract * * column 1, line 66 - column 4, line 52 * * figures 2A, 3-8 * -----	1-16	INV. G07F9/06 G07D9/00
A	US 2005/236254 A1 (UMEDA MASAYOSHI [JP]) 27 October 2005 (2005-10-27) * abstract * * the whole document * -----	1-16	
A	US 6 390 360 B1 (WALLACE DAVID W [GB]) 21 May 2002 (2002-05-21) * abstract * * the whole document * -----	1-16	
			TECHNICAL FIELDS SEARCHED (IPC) G07F G07D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	7 September 2020	Lozza, Mario

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