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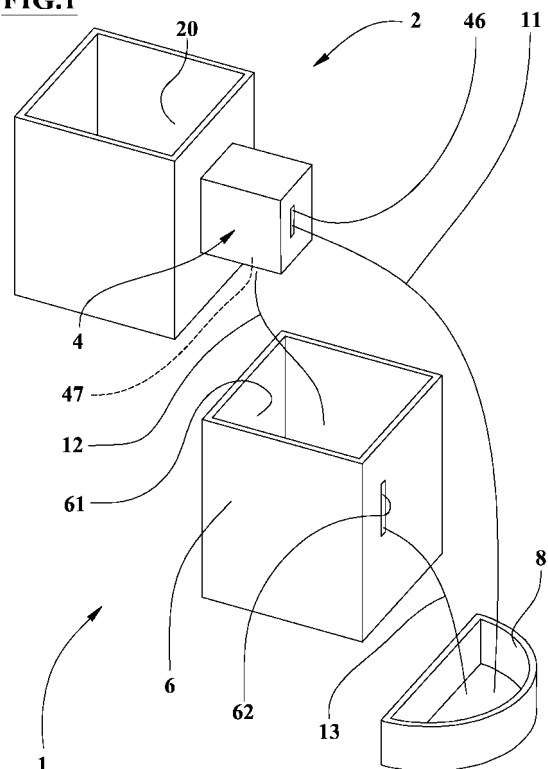
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(54) **Coin dispenser device**

(57) A tow outlets coin hopper (2) comprising a container (20) for coins and a coin conveyor (21) assigned to take one of the coins from the container (20) and to release said coin at an outlet (22) of the container (20).

Said hopper (2) comprises a coin selector (4) having a respective inlet (41) which receives the coin from the outlet (22) of the container (20) and flows the coin through a first channel (43) to a deflector (44) operated by an actuator (45) to route the coin towards a first outlet (46) of the coin selector (4) or a second outlet (47) of the coin selector (4), through respective first duct (48) and second duct (49).

FIG.1



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Description

[0001] The present invention refers to the technical field of coin handling machines and it refers to a coin dispenser device fit for dispensing coins, tokens or the like, from an apparatus for example an exchange machine from banknote to coins or dispenser machine for giving out the remaining coin amount from a payment.

[0002] There are known coin dispenser devices, so-called hopper, having a coin container and a disc element or a chain element for taking the coins one by one from this container and for supplying such coins.

[0003] A drawback of these known devices consists in that in order to provide a minimum amount and any other amount which is multiple of the minimum amount, such devices must be filled with only the coins equal to the required minimum amount.

[0004] Another drawback of these known devices used individually, consists in that they require the preliminary selection of the coins of the minimum value and, in the event of relative big amounts, they require the frequent refilling of the containers.

[0005] There are also known devices equipped with several hoppers, each of them fits to receive and to dispenser only one kind of coin.

[0006] A drawback of these known devices consists in that they are expensive and bulky, and that they require frequent fillings of selected and separated coins.

[0007] There are also other dispensers for supplying variable amounts with different values of coins, but they have the drawback that they require anywhere the repetitive fillings with selected and separated coins having at least one minimum amount.

[0008] An object of the present invention is to provide a coin dispenser device which, during its operation, can be filled with all kind of coins without selection.

[0009] Another object is to provide a dispenser having two outlets suitable also to carry out the device.

[0010] The device comprises a dispenser with two outlets including a first hopper with motorized outlet for a coin one by one; the outlet is equipped with a coin value detector and downstream it is provided with a deviator having two outlets, one of them is directed towards the user and the other one is directed towards a dispenser having one outlet comprising a second hopper whose outlet flows directly towards the user. All the devices are connected to a control electronic to receive from it the commands, for example commands for activating the deviator and/or to send detected signals, for instance signals concerning the value of the coin coming out from the first hopper.

[0011] The first hopper of the dispenser having two outlets is periodically manually filled with different amounts of coins whose value is equal to or higher than a certain minimum value. The second hopper of the dispenser having one outlet is manually filled only at the beginning with the coins of the above-mentioned minimum value. The maintenance of the stock of the minimum

value coins of the second hopper is carried out automatically with the corresponding coins of the first hopper; every time when the first hopper takes a minimum value coin which is not the last to reach the amount that the first hopper can provide to the user without risking to supply exceed amount, the electronics directs this minimum value coin towards the second hopper to refill it.

[0012] The characteristics of the invention are evidenced as followings with particular reference to the attached drawings, in which:

- figure 1 shows a schematic view of the coin dispenser device of the present invention;
- figure 2 shows an axonometric view of a two outlets coin hopper of figure 1;
- figure 3 shows an axonometric view of the coin hopper having two outlets of figure 2 in which some parts are removed to better evidence the others;
- figure 4 shows an axonometric view of the coin hopper with two outlets of figure 2 at a different point of view;
- figures 5 and 6 show respectively an axonometric and a front views of a coin selector of figure 2;
- figure 7 shows an exploded view of the coin selector of figure 5.

[0013] With reference to figures 2 - 7, numeral 2 indicates the coin hopper having two outlets object of the present invention. Said hopper having two outlets, comprises a coin container 20 and a coin conveyor 21, for example power-operated rotating disk type equipped with a housing crown to collect the coins from the container 20 and to release them one by one, to an outlet 22 of the container 20.

[0014] This two outlets coin hopper 2 comprises a coin selector 4 having a respective inlet 41 which receives the coin from the outlet 22 of the container 20 and it provides the coin, through a first channel 43, to a deflector means 44.

[0015] Said deflector means 44 is operated by an actuator means 45, for example of solenoid type, to route the coin towards a rear first outlet 46 of the coin selector 4 or towards a lower second outlet 47 of the coin selector 4, through respective first duct 48 and second duct 49.

[0016] The coin selector 4 is fixed to the coin container 20 in a detachable manner, for example by means of detachable joints and/or screws.

[0017] The coin hopper or the two outlet hopper comprises a coin sensor positioned between the coin conveyor 21 and the outlet 22 of the container 20 and whose output port is fit to provide signals concerning the value of the coin passing through it. Said coin sensor recognizes the value for example by measuring the diameter and/or the mass of the coin.

[0018] The coin conveyor 21 comprises an input port to receive an electric operative command for taking and releasing a coin.

[0019] The coin selector 4 comprises a coin detector

42 to detect the passage of the coin through the first duct 48 or through the second duct 49 and whose output port is assigned to provide signals concerning this passage. Said coin detector 42 can comprises an emitter and a detector of light at a certain frequency, for example optical or infrared; the luminous course therebetween crosses the first duct 48 and second duct 49 in a manner that it can be interrupted every time when a coin comes out from the selector 4. The emitter and the receiver can be positioned side by side and the forward and return course between them can be refracted by a prism as shown in figure 7.

[0020] The operation of the two outlets coin hopper 2 provides that, following to respective commands, it takes one of the coins collected in the container and the coin is routed towards a predetermined first outlet 46 or second outlet 47.

[0021] The coin dispenser device of the present invention and schematically shown in the figure 1 comprises:

- the two outlets coin hopper 2 described above;
- a first coin pipe 11 which connects the first outlet 46 of the coin selector 4 to a withdraw tray 8 accessible to the users and assigned to deliver the coin from said first out 46 to said withdraw tray 8;
- a second coin pipe 12 which connects the second outlet 47 of the coin 4 to an input of a container 61 of a single outlet coin hopper 6 and assigned to deliver the coin from said second outlet 47 to said container 61 of the single outlet coin hopper 6;
- a third coin pipe 13 which connects the single outlet 62 of the single outlet coin hopper 6 to the withdraw tray 8 and assigned to deliver the coin from said single outlet 62 to said withdraw tray 8.

[0022] Said single outlet coin hopper 6 is equipped with a respective coin conveyor assigned to take one of the coins from the container 61 of the single outlet coin hopper 6 and to release said coin at the single outlet 62 of this latter.

[0023] Also said coin conveyor of the single outlet coin hopper 6 comprises an input port to receive a operative command to take and release a coin.

[0024] Each coin pipe 11, 12, 13 consists in a straight tube or preferably in a curve shaped tube, whose transversal section is elongated rectangle shaped or elongated oval shaped and in which each coin is free to slide, due to the gravity effect, by its inlet to its outlet. In alternative, one or more coin pipes 11, 12, 13 can consist in a vertical labyrinth like course, which is also gravity operated, in a chain or belt or pusher conveyor or the like, or simply by the nude vertical fall trajectory of the coin.

[0025] The coin container 20, the respective outlet 22 and the coin conveyor 21 of the two outlets coin hopper 2 are almost equal to, and interchangeable with, the corresponding elements of the single outlet coin hopper 6. In particular, the two outlets coin hopper 2 can consists of a hopper, identical to the single outlet coin hopper 6,

to which is fixed the coin selector 4.

[0026] The device furthermore comprises control means, for example programmable microprocessor type known but not shown, whose input ports are connected at least to the output ports of the coin sensor and of the coin detector 42 and whose output ports are connected at least to the input port of the coin conveyor 21 of the two outlets coin hopper 2, to an input port of the actuator means 45 of the deflector means 44 and to the input port of the coin conveyor of the container 61 of the single outlet coin hopper 6 to operate the device 1.

[0027] The operation provides that, to dispense a certain amount by means of coins, the control means commands the device taking coins from the container of the two outlets coin hopper 2. If a coin has the minimum value, it is routed towards the single outlet coin hopper 6, otherwise, it is routed towards the withdraw tray 8 until reaching said amount or an amount equal to the sum minus the value of one of the coins except that of bigger value. The eventual missing amount to reach the certain amount will be dispensed from the single outlet coin hopper 6.

[0028] It is important to observe that the device can be reloaded with coins by filling all valued coins mixed together the container 20 of the two outlets coin hopper 2, the insertion of selected minimum value coins into the container 61 of the single outlet coin hopper 6 is required only at the first start up of the device.

[0029] An advantage of the present invention is to provide a coin dispenser device, which, during the its operation, can be filled out with all values of coins mixed together.

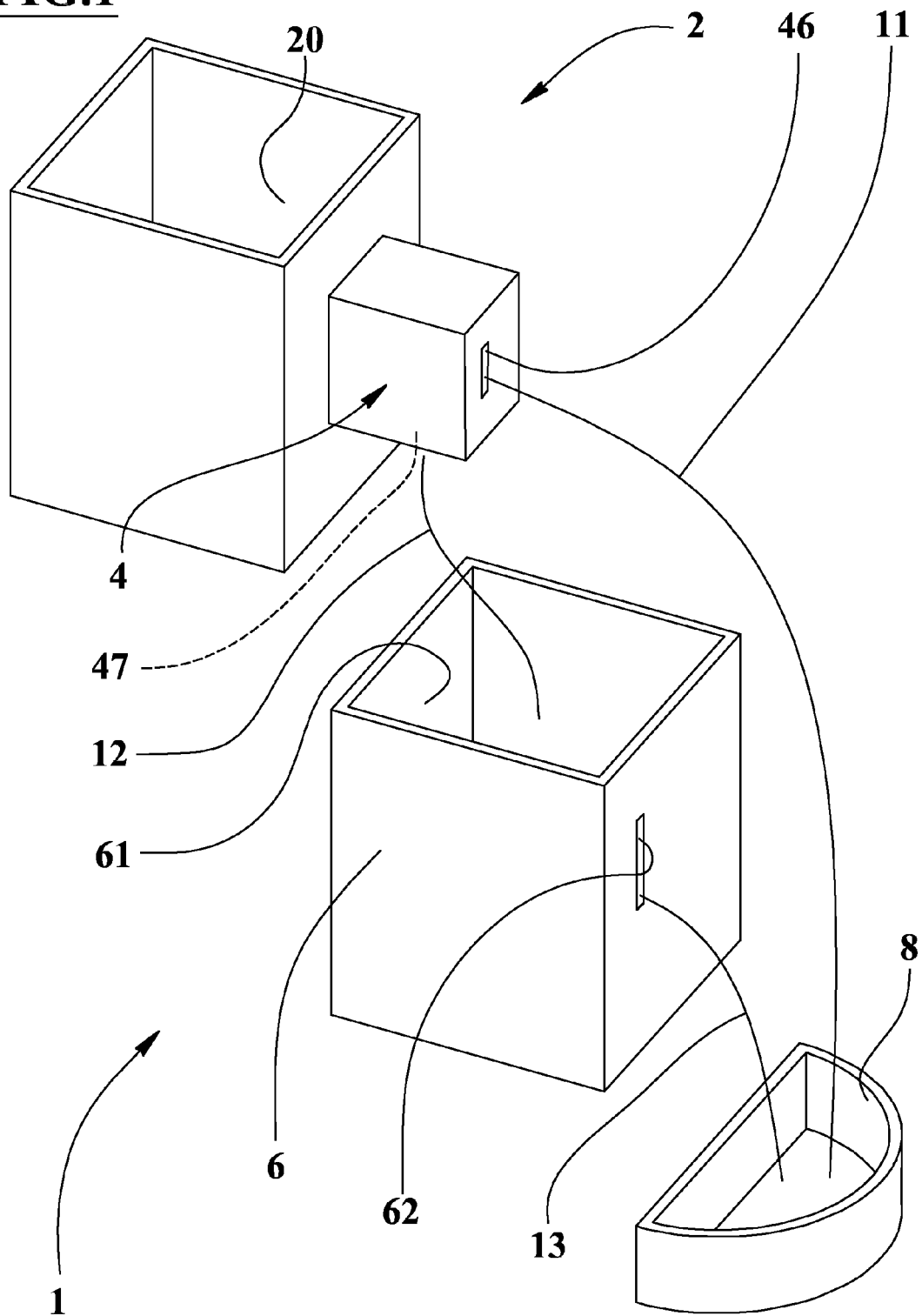
[0030] Other advantage is to provide a two-outlet dispenser suitable also to carry out the device.

Claims

1. Two outlets coin hopper (2) comprising a container (20) for coins and a coin conveyor (21) assigned to take one of the coins from the container (20) and to release said coin at an outlet (22) of the container (20); said hopper (2) being **characterized in that** it comprises a coin selector (4) having a respective inlet (41) receiving the coin from the outlet (22) of the container (20) and flowing the coin through a first channel (43) to a deflector (44) operated by an actuator (45) to route the coin towards a first outlet (46) or a second outlet (47), both of the coin selector (4), through respective first duct (48) and second duct (49).
2. Hopper according to claim 1 **characterized in that** it comprises a coin sensor positioned between the coin conveyor (21) and the outlet (22) of the container (20) and whose output port is assigned to provide signals concerning the value of the passing through coin.

3. Hopper according to any of the preceding claims **characterized in that** the coin conveyor (21) comprises an input port for receiving an operative command for taking and releasing a coin. 5
4. Hopper according to any of the preceding claims **characterized in that** the coin selector (4) comprises a coin detector (42) to detect the coin passage through the first duct (48) or second duct (49) and whose output port is assigned to provide signals concerning said passage. 10
5. Hopper according to any of the preceding claims **characterized in that** the coin selector (4) is fixed to the container (20) for coins in a detachable manner. 15
6. Coin dispenser device comprising the two outlets coin hopper (2) of any of the preceding claims; said device (1) being **characterized in that** it comprises a first coin pipe (11) connecting the first outlet (46) of the coin selector (4) to an accessible withdraw tray (8) and assigned to delivery the coin from said first outlet (46) to said withdraw tray (8); it comprises a second coin pipe (12) connecting the second outlet (47) of the coin selector (4) to an inlet of a container (61) of a single outlet hopper (6) and assigned to delivery the coin from said second outlet (47) to said container (61) of the single outlet hopper (6); it further comprises a third coin pipe (13) connecting the single outlet (62) of the of the single outlet hopper (6) to the withdraw tray (8) and assigned to delivery the coin from said single outlet (62) to said withdraw tray (8); said single outlet hopper (6) being provided with a respective coin conveyor assigned to take one of the coins from the container (61) of the single outlet hopper (6) and to release said coin at the single outlet (62) thereof. 20
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7. Device according to claim 6 **characterized in that** said coin conveyor of the single outlet hopper (6) comprises an input port for receiving an operative command for taking and releasing a coin. 40
8. Device according to claim 5 or claim 6 **characterized in that** at least one of said coin pipes (11, 12, 13) consists in one among a strait or curved tube gravity operated and whose transversal section is elongated rectangle shaped or oval shaped; a gravity labyrinth like course; a chain, belt, pusher or the like conveyor or a nude vertical fall trajectory of the coin. 45
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9. Device according to any claim from 6 to 8 **characterized in that** the container (20) for coins the respective outlet (22) and the coin conveyor (21) of the two outlets coin hopper (2) are almost equal and interchangeable in respect with the corresponding elements of the single outlet hopper (6). 55
10. Device according to the preceding claims **characterized in that** it comprises control means whose input ports are connected at least to the output ports of the coin sensor and of the coin detector (42) and whose output port are connected at lest to the input port of the coin conveyor (21) of the two outlets coin hopper (2), to an input port of the actuator (45) of the deflector (44) and to the input port of the coin conveyor of the container (61) of the single outlet hopper (6) for the operation of the device (1).

FIG.1



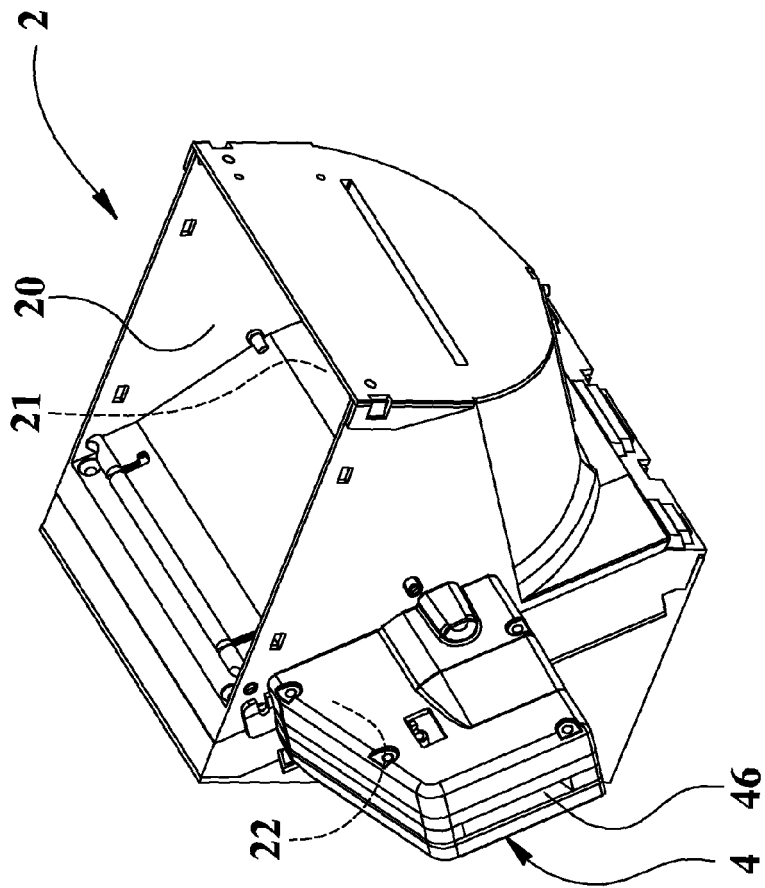


FIG. 2

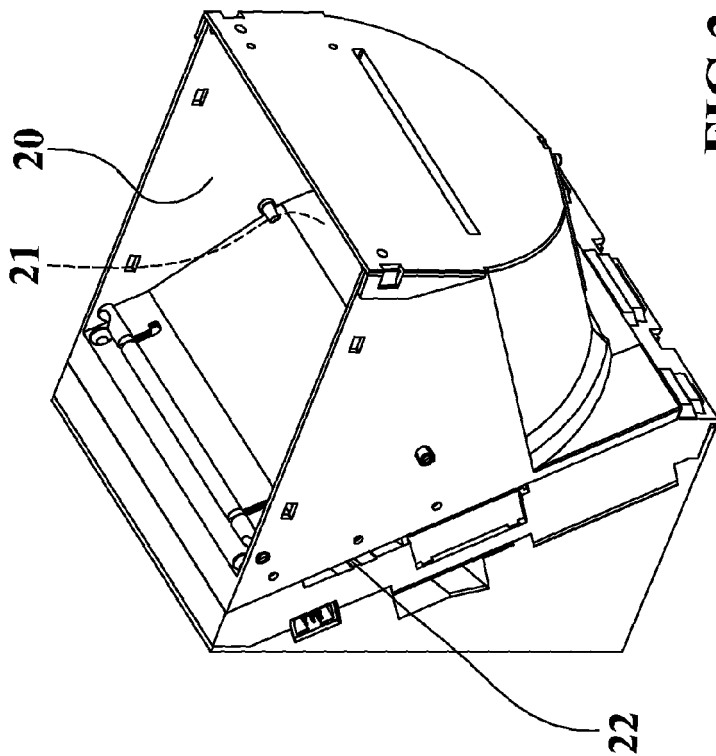
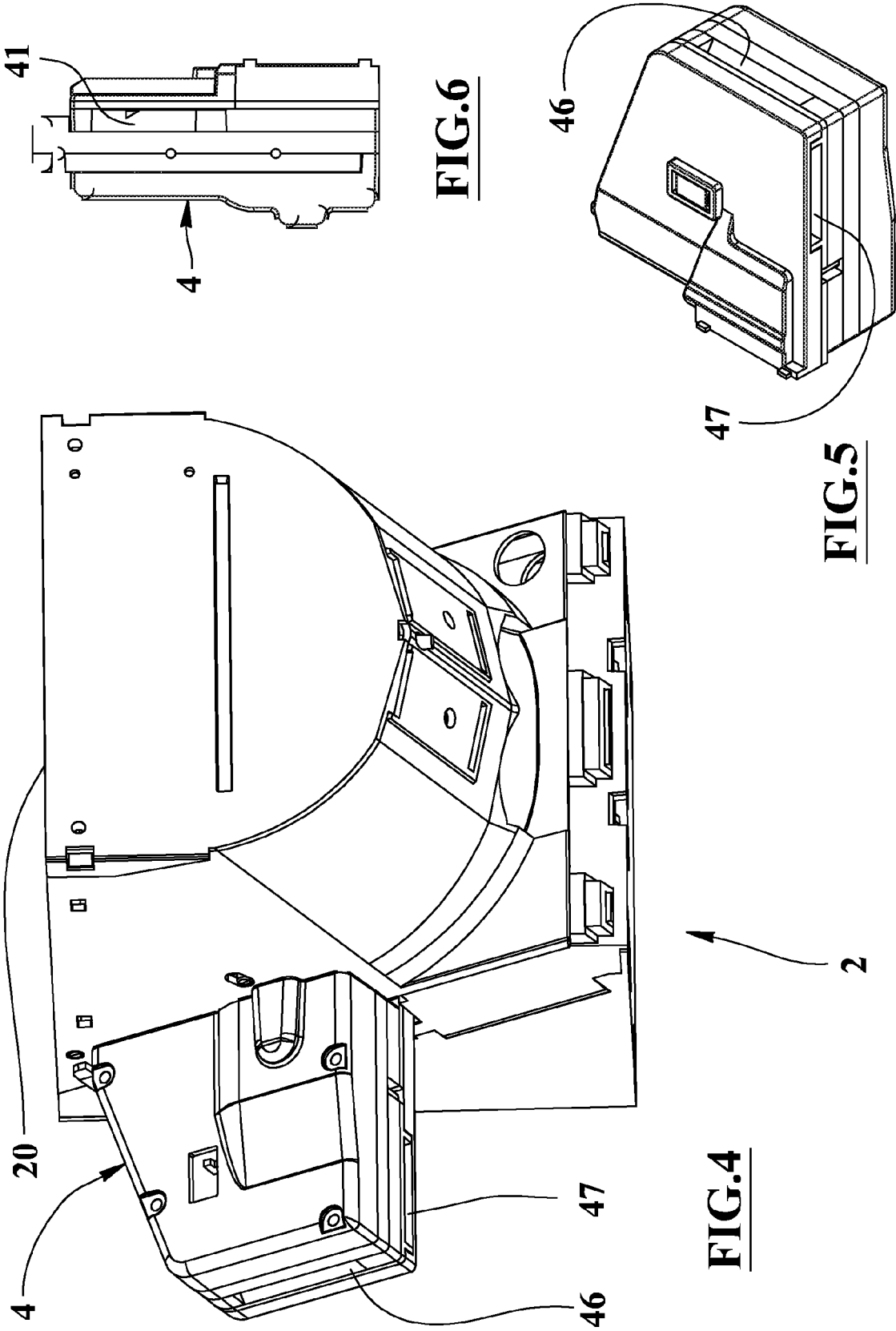


FIG. 3



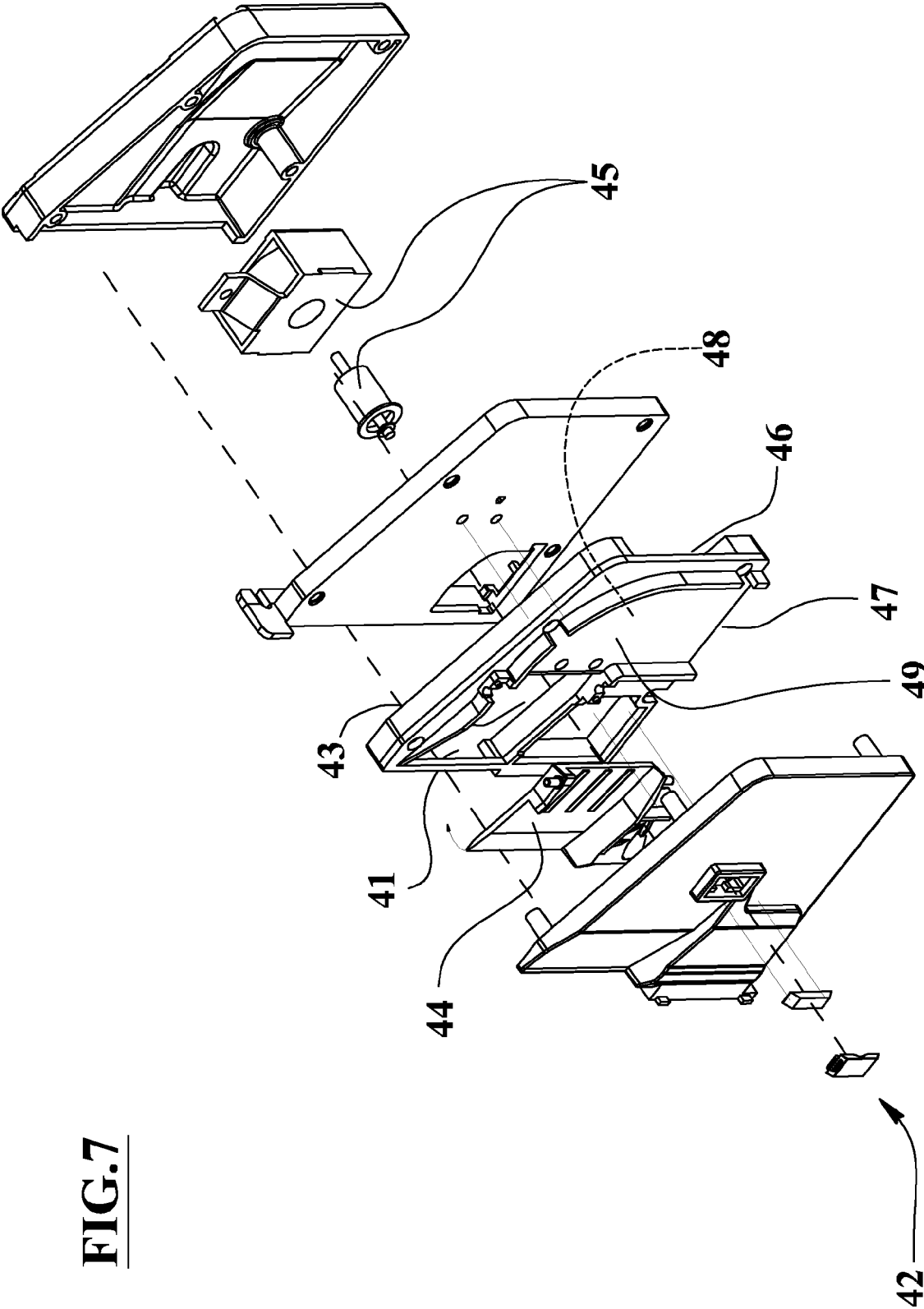


FIG.7

Application Number
EP 10 15 6565

DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
X	WO 98/00813 A (COINSTAR INC [US]; MARTIN DOUG [US]; CANNON LARRY [US]; WAECHTER MARK) 8 January 1998 (1998-01-08) * abstract; figures 1,17,18 * * claims 1,36,37,58-61,64-66 * * page 7, line 15 - page 8, line 13 * * page 8, line 32 - line 36 * * page 14, line 1 - line 10 * -----	1-10
		INV. G07D3/12
		TECHNICAL FIELDS SEARCHED (IPC) G07D
The present search report has been drawn up for all claims		
Place of search	Date of completion of the search	Examiner
Munich	3 May 2010	Rother, Stefan
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document		

**ANNEX TO THE EUROPEAN SEARCH REPORT
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