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(54) Apparatus for distributing coins

(57) This invention has been developed for obtaining a coin distributing equipment in a shape which can be stored easily under equipment such as a money register. Also, this invention has been developed for obtaining a coin distributing equipment which can be applied to many kinds of coins in the European and American countries.

The equipment is an apparatus for distributing a plurality of coins comprising at least: cover means with

a low height; slender belt means for coin conveyance which is provided turnably along the outside perimeter of the bottom of the cover means; and passage means for coins having a plurality of openings for coin distribution and an inclined board, the outside perimeter of which is high and the inside perimeter of which is approached to the outside of the belt means.

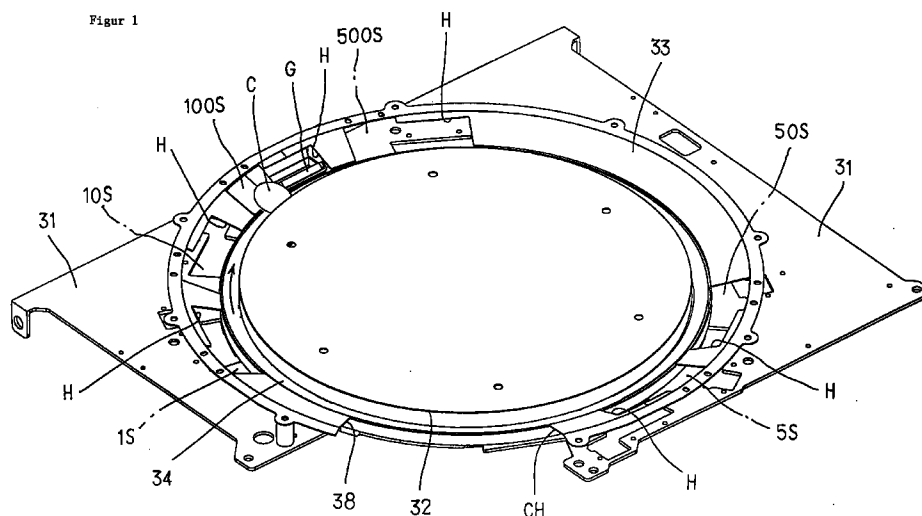


Figure 1

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Description

[TECHNICAL FIELD]

[0001] This invention relates to a coin distribution apparatus for distributing or dividing, i.e. distinguishing and separating, several kinds of currencies, i.e. coins or the like, according to their types or species.

[0002] Especially, this invention relates to an apparatus for distinguishing several kinds of coins and distributing each coin according to its money type. This invention specifically relates to a coin distribution apparatus which contains each coin according to the money type and is suitable for an apparatus for preparing change and so on. In addition, the term 'coin' which is used in the specification includes disc bodies such as currency coins, medals, tokens, etc.

[PRIOR ART]

[0003] Until this time, various apparatuses for distributing coins have been developed. An example is disclosed in the specification of Japanese Patent Application 6-123019 filed by this applicant. This Japanese Patent Application is published as JP-A-7-306965 and corresponds to U.S. Patent 5,562,536. This distribution apparatus is provided with means 83, etc. to receive various coins loosely and to send out the coins one by one as shown in Fig. 7. The apparatus is provided with a coin guide path 111c where a plurality of openings 111f-111k is formed along the periphery. In addition, gauge means 111 for coin selection having a coin guide path is provided. Furthermore, the apparatus is provided with conveying means 130, etc. for moving the coin along the above-mentioned coin guide path.

[PROBLEM ADDRESSED]

[0004] This invention is developed for the purpose of simplifying the distribution apparatus for coins. Moreover, this invention is developed for the purpose of providing a coin distribution apparatus which is enabled to cope with the multiple kinds of money of European and American countries.

[SOLUTION OF THE INVENTION]

[0005] This object is achieved by an apparatus for distributing coins according to claim 1.

[0006] Further developments of the invention are given in the dependent claims.

[0007] Especially, this invention achieves the purpose of arranging the detecting means for coins and the opening and closing means for the coin receiving holes at the undersurface of the coin path, making the height of the entire apparatus low, and increasing the number of types of money, which can be distributed, and making the distribution order of the money types optionally.

[0008] In other words, this invention achieves the purpose of providing a shape, which can be easily housed under apparatuses such as money registers, with improved functions.

[0009] Embodiments of this invention are explained below referring to the attached drawings, of which:

Fig. 1 is a perspective view showing a first embodiment according to this invention in a schematic manner;

Fig. 2 is a plan view showing a service condition of the embodiment of Fig. 1 in a schematic manner;

Fig. 3 is a sketch plan view for showing the drive means of Fig. 1;

Fig. 4 is an expanded sectional view showing a principle part;

Fig. 5 is an expanded sectional view showing another principle part;

Fig. 6 is a sectional view corresponding to Fig. 5 showing an operation condition;

Fig. 7 is a perspective view showing a prior art example;

Fig. 8 is a plan view which shows roughly a second embodiment of this invention;

Fig. 9 is a perspective view which shows roughly a hopper equipment which is used for the embodiment of Fig. 8;

Fig. 10 is a plan view which shows roughly driving means of the embodiment in Fig. 8;

Fig. 11 is a rough perspective view which shows a third embodiment according to this invention;

Fig. 12 is a plan view of the embodiment of Fig. 11;

Fig. 13 is a plan view to show a main part of the embodiment of Fig. 12;

Fig. 14 is an enlarged section view which shows a main part of the embodiment of Fig. 13 from the front;

Fig. 15 is a perspective view which shows a main part of the embodiment of Fig. 14;

Fig. 16 is an expanded sectional view which shows another main part of the embodiment of Fig. 12 from the front;

Fig. 17 is an expanded sectional view which shows another pivot part of the embodiment of Fig. 12 from the front; and

Fig. 18 is a sectional view which shows an operation of the embodiment of Fig. 17.

[FIRST EMBODIMENT]

[0010] A first embodiment of a money distribution apparatus for a plurality of coins shown in Fig. 1 is provided with a large rectangle base board 31. On the entire center of base board 31, a fairly large circular cover board 32 with a low height is fixed by a screw stop. At the periphery of circular cover board 32, a path or passage board 33 of circle ring type is fixed to the base board 31 by screw stop. In addition, the path board 33 is

formed so that it is inclined toward the bottom of the peripheral wall of cover board 32, as shown in Fig. 5.

[0011] Near the bottom of path board 33 which is inclined downward, a long and slender belt 34 for conveying coins is arranged rotatably. In other words, near the bottom of peripheral wall of cover board 32, the long and slender belt 34 for conveying coins is arranged rotatably. This conveying belt 34 is made from rubber or the like and many grooves are formed radially on the upper surface of this conveying belt 34 (not shown). Therefore, a friction surface is formed. In addition, the friction surface is inclined to be in one plane with the inclined surface of path board 33 of metal, as shown in Fig. 5. A coin C on the path board 33 will slide down, and will contact the perimeter surface of cover board 32.

[0012] The coin contacting the perimeter surface of cover board 32 will be conveyed clockwise by the conveying belt 34 (see Fig. 1). In addition, the conveying belt 34 is provided at the outer edge 39 of a fairly large ring body 37 of plain shape (refer Fig. 4). This ring body 37 is rotatably arranged along the internal-circumference surface of cover body 32. That is, rollers 40 are pivoted on the large ring body 37 at equal intervals (refer Fig. 4), and the large ring body 37 is rotatably arranged on the base board 31 centering at the center of base board 31.

[0013] Internal teeth are formed on the internal-circumference surface of ring body 37, and are meshed with three gears 41 pivoted by the base board 31 (see Fig. 3). In other words, the rotation of ring body 37 is guided by the gears 41 at three support points. Furthermore, a gear 42 which meshes with the internal teeth of ring body 37 is pivoted by the base board 31. The gear 42 has geared with a drive gear 43 which penetrates the base board 31. This drive gear 43 is rotated by an electric motor (not shown) of thick plate shape which is secured at the undersurface of base board 31.

[0014] Moreover, an alignment/discrimination apparatus for coins (see Fig. 2) is mounted at a notch 38 formed over a certain angular part of the periphery of the distribution apparatus for coins as shown in Fig. 1. By the alignment/discrimination apparatus, coins are aligned and distinguished into true and false ones and the true ones are selected to be supplied one by one to the path board 33. The coin supplied to the path board 33 is conveyed clockwise by the belt 34. The outline of the coin alignment/discrimination apparatus is explained below: The apparatus has first means 11, etc. for putting a plurality of thrown-thereinto coins in a row, which includes, as shown in Fig. 2, a hopper 11 for coin injection, a low speed belt 12, and a reverse-rotation roller 15 for preventing overlap of two coins.

[0015] Moreover, the apparatus is provided with means 16, etc. for separating the plurality of coins in the row one by one, which includes a high-speed belt 16. In addition, the apparatus has means 18, etc. for distinguishing the type or the like of the separated coins into genuine and non-genuine ones, which includes a sen-

sor for discriminating coins.

[0016] Furthermore, the apparatus is provided with means 21, etc. for receiving the genuine coin, when the one separated coin is detected to be genuine, which includes a selection roller 21 for a coin and a solenoid 24 for operating the selection roller 21.

[0017] The coin alignment/discrimination apparatus is explained in more detail in the European patent application filed on the same day as this application and claiming the priority of the Japanese Patent Application 10-90552.

[0018] In the path board 33 on the left-hand side in Fig. 2, i.e. downstream of notch 38 if seen in the direction of the movement of belt 34, a sensor 1S for detecting a coin is provided. The sensor 1S is, for example, a magnetic sensor, and if a 1 yen coin is detected, the sensor will output a signal. A sensor 10S provided downstream near the sensor 1S detects a 10 yen coin similarly. In the path board 33 (on the upper side in Fig. 2) a sensor 100S detecting a 100 yen coin is provided further downstream. A sensor 500S provided downstream near the sensor 100S detects a 500 yen coin similarly. In the path board 33 on the lower part in Fig. 2 a sensor 5S for detecting a coin is provided upstream of notch 38. The sensor 5S will output a signal, if a 5 yen coin is detected. A sensor 50S provided upstream near the sensor 5S detects 50 yen coin similarly. In addition, the upper surfaces of each of sensors 1S - 500S are arranged to coincide with the upper-surface level of path board 33 as shown in Fig. 4. In other words, each sensor is arranged such that coins can pass smoothly the ring shape path board 33.

[0019] As shown in Fig. 2, on the path board 33 on the downstream side of each of sensors 1S - 500S, an oblong open-hole H through which each coin can drop is formed, respectively. Further, these oblong open-holes H are respectively formed in the same shape in order to allow and ease a free exchange of the order of distribution of the coin types.

[0020] An opening CH which is provided at the most downstream position of path board 33 is formed in order to store coins or cancel coins.

[0021] Near the inside edge of each oblong open-hole H, a long and slender gate G is pivoted openably, respectively (see Fig. 2), i.e. pivotable to open and close the corresponding oblong-hole. In addition, the gate G is specifically a long and slender roller which is rotatably arranged. Moreover, the upper surface of each gate G is arranged to coincide with the upper-surface level of path board 33 as shown in Fig. 5.

[0022] That is, each gate G is arranged so that the coin can pass the ring shape path board 33 smoothly.

[0023] As shown in Fig. 5, on the base board 31 near the outside edge in each open-hole H, a solenoid SL is fixed, respectively. Each solenoid SL operates the corresponding gate G in response to a signal from the corresponding sensor 1S - 500S to open the corresponding open-hole H, respectively (refer to Fig. 6). In addition,

although not shown, the solenoid SL for the gate for each coin type of 1 yen, 10 yen, 500 yen, 50 yen, and 5 yen is similarly fixed to the base board 31, respectively.

[OPERATION OF THE FIRST EMBODIMENT]

[0024] As shown in Fig. 1, a coin C is conveyed on the path board 33 by the belt 34. If the conveyed coin C is for example a 100 yen coin, the sensor 100S will detect the coin C as a 100 yen coin (refer to Fig. 4). If the sensor 100S detects the coin C of 100 yen, a current will be flown into the solenoid SL, the gate G will be operated, and the open-hole H will be opened (see Fig. 6). Thus, the 100 yen coin C will drop into the open-hole H by its own weight.

[0025] The base board 31 is also provided with an open-hole H corresponding to the open-hole H of the path board 33, and the 100 yen coin C which dropped through the holes, is contained in a hopper apparatus (not shown). On the other hand, for example, when a 500 yen coin C is conveyed the coin C passes the sensor 100S and is not detected as being a 100 yen coin. In this case, as the sensor 100S does not detect the 500 yen coin C as a 100 yen coin, a current does not flow to the solenoid SL. Therefore, as shown in Fig. 5, the gate G keeps the open-hole H closed and the 500 yen coin C will pass the open-hole H.

[0026] Thus, each coin of 6 different types of money, i.e. 1 yen, 10 yen, 100 yen, 500 yen, 50 yen and 5 yen, in the example, can be distributed according to the money classification.

[0027] In addition, if the number of open-holes H is increased, for instance, on the right-hand side of the path board 33 in Fig. 2, a coin distribution apparatus for 7 types of money or 8 types of money can be obtained.

[0028] Moreover, when coin discrimination signals from the coin alignment/discrimination apparatus (see Fig. 2. lower left) are processed statistically, the confirmation of the above-mentioned coin distribution may be obtained more exact.

[EFFECT OF THE FIRST EMBODIMENT]

[0029] According to this embodiment, since coins can be conveyed only by the long and slender conveying belt, the distribution apparatus can be simplified extremely. Furthermore, according to this embodiment since the coin detector means and the opening and closing means for coin receiving open-hole are arranged at the undersurface of coin path, the height of entire apparatus can be made low. In other words, the distribution apparatus according to this embodiment can secure the height which can be easily housed under apparatuses, such as a money register. In addition, since this apparatus has a simple structure, it has the advantage that the maintenance becomes extremely simple and its production costs are lowered. Furthermore, according to this embodiment the distribution of

many types of money can be obtained, and there is a large effect that the distribution order of money types can be made as desired.

5 [SECOND EMBODIMENT]

[0030] A second embodiment of an apparatus for dividing or distributing a plurality of coins according to their species is equipped with a big rough rectangular base board 31 as shown in Figure 8.

[0031] On approximately the whole base board 31, a little small and low height oval cover board 32 is fixed by screws and so on. At the outskirts of oval cover board 32, an approximately oval ring shaped path or passage board 33 is fixed on the base board 31 by screws and so on. Further, the passage board 33 is formed to incline toward the peripheral bottom wall of cover board 32 (see Figure 4). Near the bottom of passage board 33 which is inclined below, a slender belt 34 for coin conveyance is rotatably mounted. When saying in other words, near the peripheral bottom wall of cover board 32, the slender belt 34 for coin conveyance is rotatably provided.

[0032] This belt 34 for conveyance is made from rubber or the like, and a lot of ditches or grooves (not shown) are formed on the surface thereof to form a frictional surface. The frictional surface is inclined to have an approximately identical inclination as the passage board 33 made from metal and to be in one plane (see Fig. 5). Therefore, a coin on the passage board 33 slips and touches the surface around the cover board 32 (see Figure 4). Then, a coin C which touches the surface around the cover board 32 is conveyed in the clockwise direction by the friction of belt 34 for conveyance (see Figure 1). This construction is a similar to the first embodiment except for the oval form.

[0033] Further, the belt 34 for conveyance is attached to the prominences 39 of a big oval ring body 37 (see Fig. 3).

[0034] This ring body 37 has a flexibility and consists of a synthetic resin formed article or the like having flexibility. That is, the section of ring body 37 is formed at vertical length and the whole ring body 37 can be curved. On the underside of ring body 37, a multiplicity of little long prominences 39 are fixed directed outside. Moreover, the tip of each prominence 39 is formed in square ring shape, for example. Thus, the rubber belt 34 is attached to the ring body 37, intervening the tip ring parts of prominences 39.

[0035] In addition, the ring body 37 is rotatably mounted along the internal circumference surface of cover body 32.

[0036] Concretely, small rollers 40 are pivoted at regular intervals in the big ring body 37 (see Figure 4). That is, the ring body 37 is positioned on the surface of base board 31 and is also turnably provided along the internal circumference surface of oval cover body 32. Moreover, an internal gear is formed along the whole internal

circumference surface of ring body 37. Then, a little big gear 42 which meshes with the internal teeth of ring body 37 is pivoted at the base board 31 (see Figure 3). On the other hand, the whole ring body 37 is guided by a multiplicity of small rollers 41 which were pivoted at the base board 31.

[0037] Saying in other words, the rotation of the oval ring body 37 is guided by a plurality of rollers 41. The gear 42 meshes with a drive gear 43 which is extended through the base board 31. This drive gear 43 is rotated by an electric motor (not shown) of plank form which is fixed at the underside of base board 31. Also, in the cut or notch 38 of the passage board 33 which is shown at the lower left in Figure 8, an equipment for coin alignment and discrimination is mounted as in the first embodiment.

[0038] By the equipment of coin alignment and discrimination, coins are aligned and distinguished one by one and further supplied to the passage board 33 (see Fig. 8) as in the first embodiment.

[0039] The coin which was supplied to the passage board 33 is conveyed in the clockwise direction by the belt 34. A sensor 1S for coin detection is shown on the left side of passage board 33. The sensor 1S is, for example, a magnetic sensor and outputs a signal when it detects a 1 yen coin. In the same way, sensors 10S, 100S, 500S, 50S, 5S, which are provided, in this order, downstream of sensor 1S seen in the direction of movement of belt 34, detect a 10 yen coin, a 100 yen coin, a 500 yen coin, a 50 yen coin and a 5 yen coin, respectively, and output a signal in case of the corresponding detection as in the first embodiment. The surface levels of each of sensors 1S - 500S are arranged to be approximately the same as the surface level of passage board 33 (Fig. 4).

[0040] In other words, each of sensors 1S - 500S is arranged such that the coins are able to pass the oval ring shaped passage board 33 smoothly. In the passage board 33 at the downstream side of each of sensors 1S - 500S, oblong holes H, through which each species of coins can fall are formed respectively, as shown in Fig. 8.

[0041] The oblong holes H are formed in approximately the same shape, respectively, to allow and ease a free exchange in the order of distribution of the coin types.

[0042] Also, an opening CH in the most downstream position of passage board 33 is formed to collect or cancel coins.

[0043] Near the inside edge of each oblong hole H, a slender gate G is pivoted to open and shut freely the hole H, respectively. The arrangement and operation of the gates G is similar to the first embodiment.

[0044] Each of the distribution arrangements for a different coin type has an oblong-hole H, a corresponding one of sensors 1S - 500S and the gate G, and is additionally provided with a corresponding one of a plurality of hopper equipments 1H' - 500H'.

[0045] Each of hopper equipments 1H' - 500H' are formed in the same style structure. For illustrating, only the hopper equipment 100H' for 100 yen coin use is explained roughly, referring to Fig. 9.

[0046] When a head-stood electric motor 115 is driven, a disk 141 is turned in the direction of the arrow by means of gears (not shown) and a turn axis 126. As a result, a plurality of 100 yen coins in a square pan-shaped hopper 145 is paid out one by one into an outlet 137 by means of a disk 141.

[0047] That is, when the electric motor 115 is rotated, the coins fall into either of pierced holes 12 or the disk 141 which is turned. The coin most below of the coins in the pierced hole 142 slides on the surface of plate 133 which is made from metal, by means of a nail 143 with the turn of disk 141. The coin sliding on the surface of plate 133 is guided in the direction of an outlet 137 by the wall of hopper 145 and a guide fragment 136. The coin which was guided to the direction of outlet 137 is pressed out from the position of pierced hole 142 by the nail 143 and one pair of pins (not shown).

[0048] The coin which was pressed to the outside is more slipped out by nail 143, resisting each spring (not shown) of one pair of rollers 139.

[0049] The slipped coin passes a sensor 108 and is thrown out on a belt 9 (see Fig. 8) for carrying-out. The coin which was thrown out on the belt 9 is carried to a box 7 for change (see Fig. 8) by the belt.

[0050] Further, the coin which was pressed out and slipped from the hopper equipment 100H' is electronically detected, when passing the sensor 108. Therefore, a signal from sensor 108 indicating the output of one coin is used for the calculation of the number of coins which are released from the hopper equipment 100H'.

[0051] An electric connector 112 is shown on the lower right of Fig. 9. Also a gear train (not shown) and so on are stored between a bottom board 111 and a base board 131. Also, nails 149 which were formed on the base board 131 are bitted into hollows (not shown) which are formed on the hopper 145, using springs (not shown). On the other hand, hooks (not shown) which are formed on the lower edge of hopper 145 are inserted into small holes 147 of base board 131. In this way, the hopper 145 is fixed on the base board 131.

[0052] Each hopper equipment 1H' - 500H' is made in the same size, but hopper equipments for coins of 5 yen, 50 yen, 500 yen and so on, that have a low use frequency may be made smaller.

[0053] Of course, the hopper equipments can be provided in a similar way below the distribution apparatus of the first and third embodiment, occasionally with triangle hoppers arranged into a circular tart-like assembly in order to adapt to the space requirements.

[THIRD EMBODIMENT]

[0054] An equipment for classifying a plurality of coins

which is a third embodiment of the invention is shown in Fig. 11 and 12 and equipped with a big rough rectangle base board 31. A rather big circular cover board 32 with a low height is fixed on the large central portion of base board 31 by screwing. Along the outskirts of cover board 32, a passage board 33 having a rough circle ring shaped form is fixed on the base board 31 by screwing. Further, the passage board 33 is formed to incline to the bottom of or under the peripheral wall of cover board 32, as shown in Figure 16.

[0055] Near the bottom of passage board 33 which inclines below, in other words, near the bottom of the peripheral wall of cover board 32, a slender ring 34 for coin conveyance is rotatably mounted. This ring 34 for conveyance is made of rubber or the like, and a lot of grooves 35 are formed on the surface to form a frictional surface 36 as shown in Fig. 15. Further, the frictional surface 36 is inclined and the surface has an inclination approximately identical to the inclination of the passage board 33 made from metal, as shown in Fig. 14. Therefore, a coin C on the passage board 33 slips and touches the surface around the cover board 32, and the coin C is conveyed in the clockwise direction by the ring 34 for conveyance (see Fig. 11).

[0056] The ring 34 for conveyance is supported on brims 39 of the ring body 37 having a rough L-shaped section form, and the ring body 37 is turnably mounted along the internal circumference surface of cover body 32. That is, rollers 40 are pivoted at regular intervals on the big ring body 37, and the ring body 37 is mounted on the base board 31 and can be turned around the center of base board 31. Rollers 41 for three-point supporting which are pivoted on the base board 31 are in contact with the internal circumference surface of ring body 37, and the turning of ring body 37 is guided. Moreover, inside teeth are formed on the internal circumference surface of ring body 37, and a gear 42 which meshes with the inside teeth is pivoted at the base board 31.

[0057] The gear 42 meshes with a driving gear 43 which is pierced through the base board 31. The driving gear 43 is rotated by an electric motor (not shown) with a plank form, which is fixed on the underside of base board 31.

[0058] A diameter sensor 500D for coins is shown in the passage board 33 at the left side of Fig. 1. When the diameter sensor 500D detects the 500 yen coin having the biggest diameter, it generates a signal (see Fig. 16). In the same way, a diameter sensor 10D in Fig. 1 detects a 10 yen coin having the next biggest diameter. Also, a diameter sensor 100D detects a 100 yen coin having the third biggest diameter. A diameter sensor 1D for coins is shown in the passage board 33 in Fig. 11. When the diameter sensor 1D detects a 1 yen coin having the smallest diameter, it generates the signal. In the same way a diameter sensor 50D in Fig. 11 detects a 50 yen coin having the second smallest diameter. Also, a diameter sensor 5D detects a 5 yen coin having the third smallest diameter.

[0059] Moreover, in the passage board 33 at the right side of diameter sensor 500D, an oblong opening 500H is formed, into which the 500 yen coin can fall (see Fig. 18). In the same way, in the passage board 33 at the right side of diameter sensor 10D, an oblong opening 10H is formed, into which the 10 yen coin can fall. Likewise, in the passage board 33 at the right side of diameter sensor 100D, an oblong opening 100H is formed, into which the 100 yen coin can fall.

[0060] In the same way, an opening 5H near the diameter sensor 5D is formed into which the 5 yen coin can fall. An opening 50H near the diameter sensor 50D is formed into which the 50 yen can fall. In addition, an opening 1H near the diameter sensor 1D is formed into which the 1 yen coin can fall.

[0061] Further, at the outside edge of oblong opening 500H, a slender gate fragment 500G is hinged such that it is able to open and shut (see Fig. 18).

[0062] In the same way, at the outside edge of oblong opening 10H, a slender gate fragment 10G is hinged such that it is able to open and shut. In the same way, at the outside edges of oblong openings 100H, 5H, 50H and 1H, slender gate fragments 100G, 5G, 50G and 1G are hinged such that they are able to open and shut, respectively.

[0063] Moreover, as shown in Figs. 17 and 18, a kind of electromagnet 500E, which is formed of coils wrapped around a permanent magnet is fixed such that it hangs down under the passage board 33 at the outside edge of opening 500H.

[0064] The permanent magnet acts generally and is absorbing a scrap of iron, if present. When an electric current flows in the electromagnet 500E, the permanent magnet action is denied and the scrap of iron becomes free. Although, not shown, also in the same way the electromagnets for the 10 yen coin, the 100 yen coin, the 5 yen coin, the 50 yen coin and the 1 yen coin are of course fixed such that they hang down under the passage board 33 respectively.

Claims

1. An apparatus for distributing coins according to their types, comprising at least:

cover means (32) with a low height;
slender belt means (34, 37, 42) for coin conveyance which is provided turnably along the outside perimeter of the bottom of the cover means; and
passage means (33, H, 1H - 500H) for coins having a plurality of openings (H, 1H - 500H) for coin distribution and an inclined board (33), the outside perimeter of which is high and the inside perimeter of which is approached to the outside of the belt means.

2. An apparatus as described in claim 1, further com-

prising,

at the underside of at least one of the openings,
means (G, SL) for opening and closing the
opening (H).

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3. An apparatus as described in claim 2, wherein

said means for opening and closing is driven in
response to means (1S - 500S) for detecting a
coin.

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4. An apparatus according to one of claims 1 to 3,
wherein

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the cover means (32) has a large disc form,
and
the passage means (33) has a corresponding
ring-shape form.

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5. An apparatus according to one of claims 1 to 3,
wherein

the cover means (32) has a big oval board
form, and
the passage means (33) has a corresponding
oval ring-shape form.

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6. An apparatus as described in claim 1, further com-
prising:

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means for opening and closing the openings
(1H - 500H).

7. An apparatus as described in claim 6, wherein

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the means for opening and closing the open-
ings has means (1D - 500D) for detecting the
diameter of a coin.

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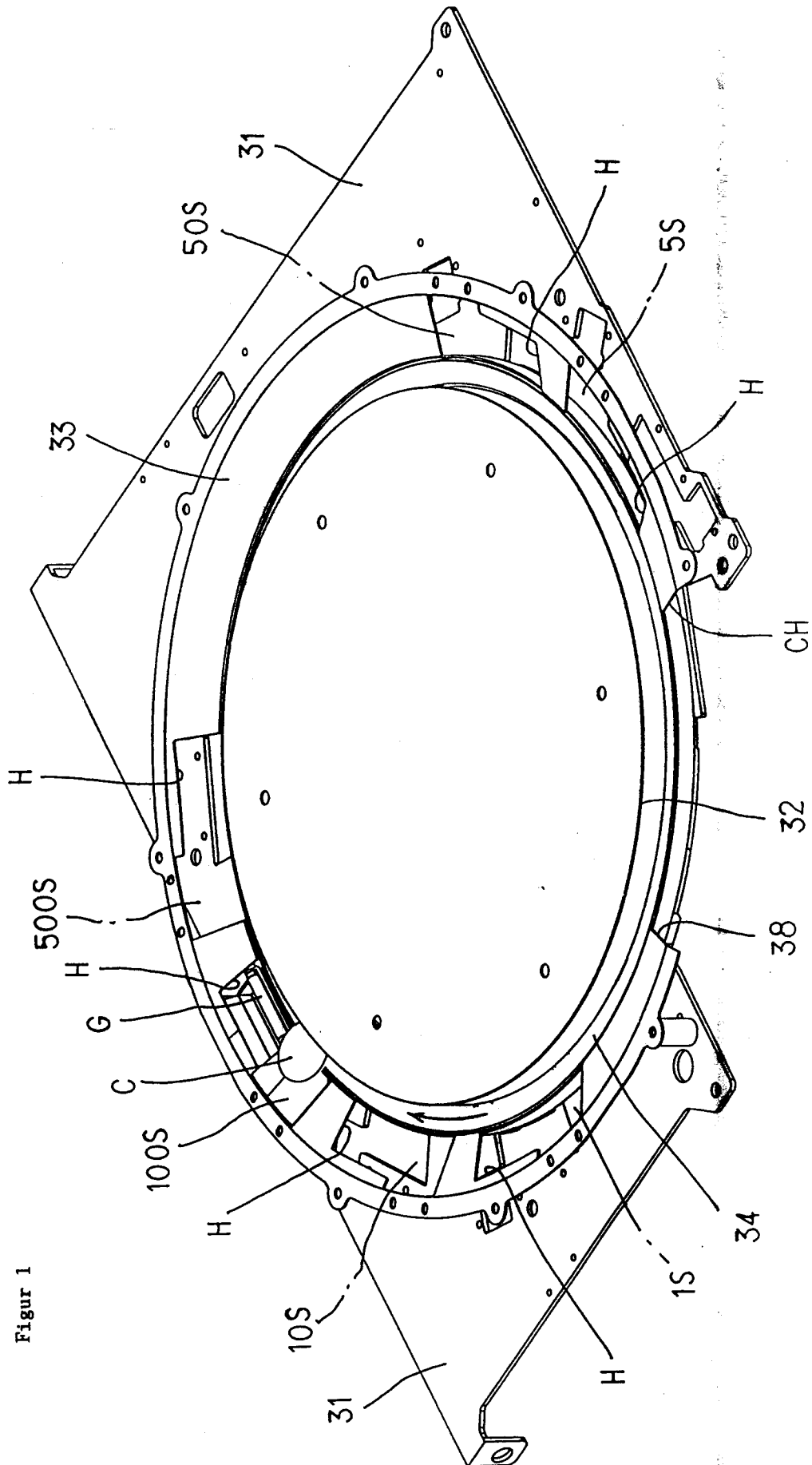
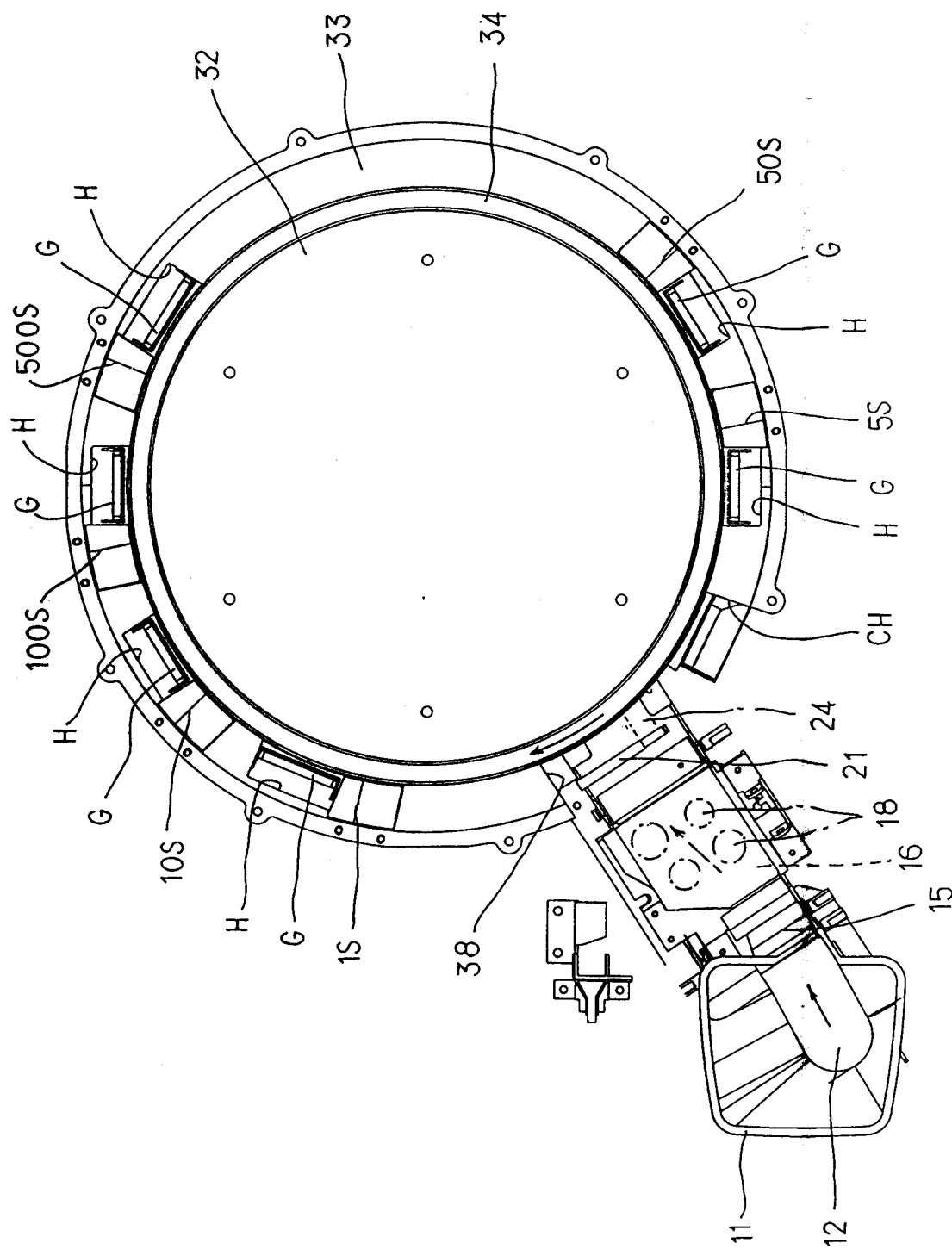


Figure 1

Figur 2



Figur 3

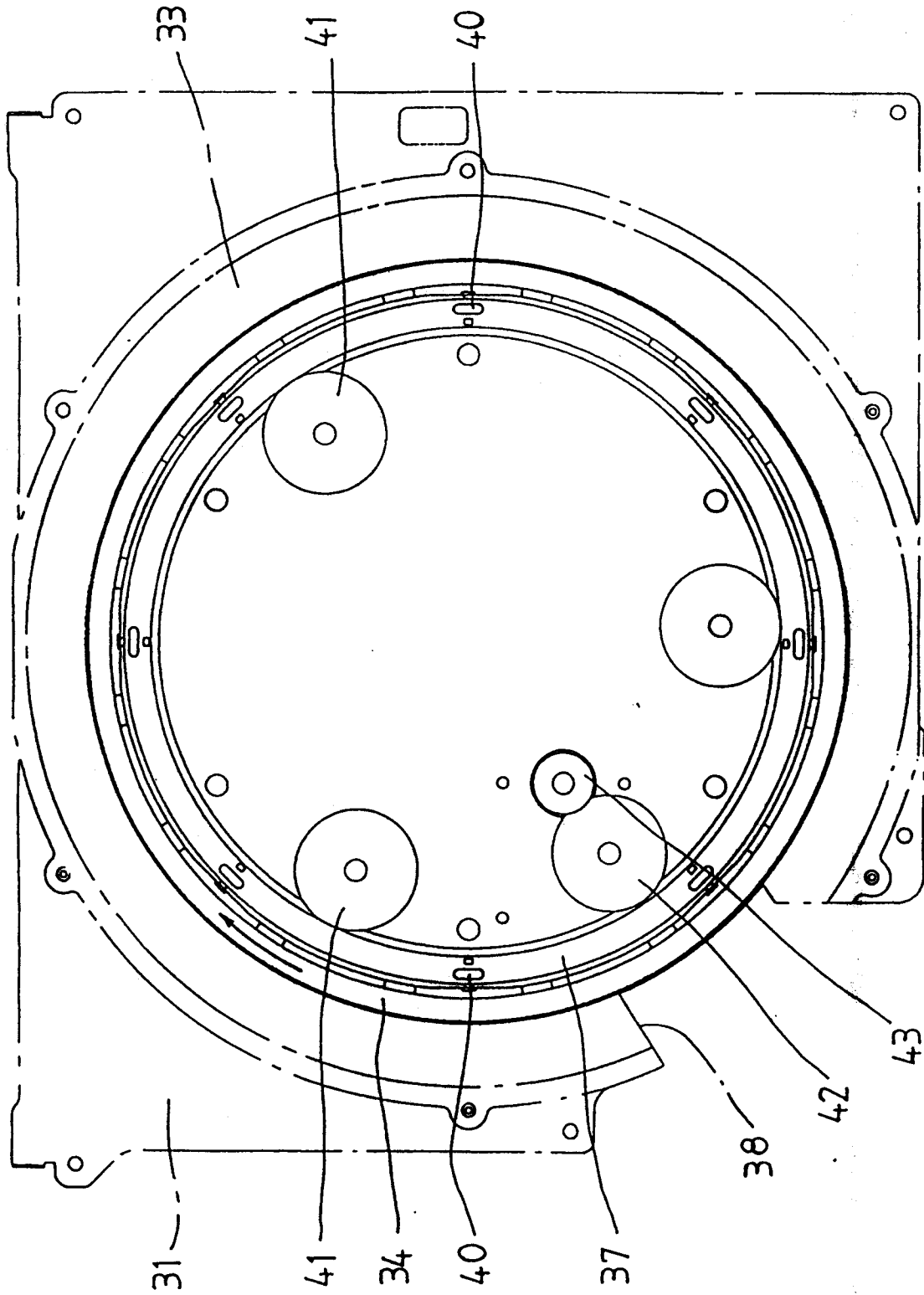
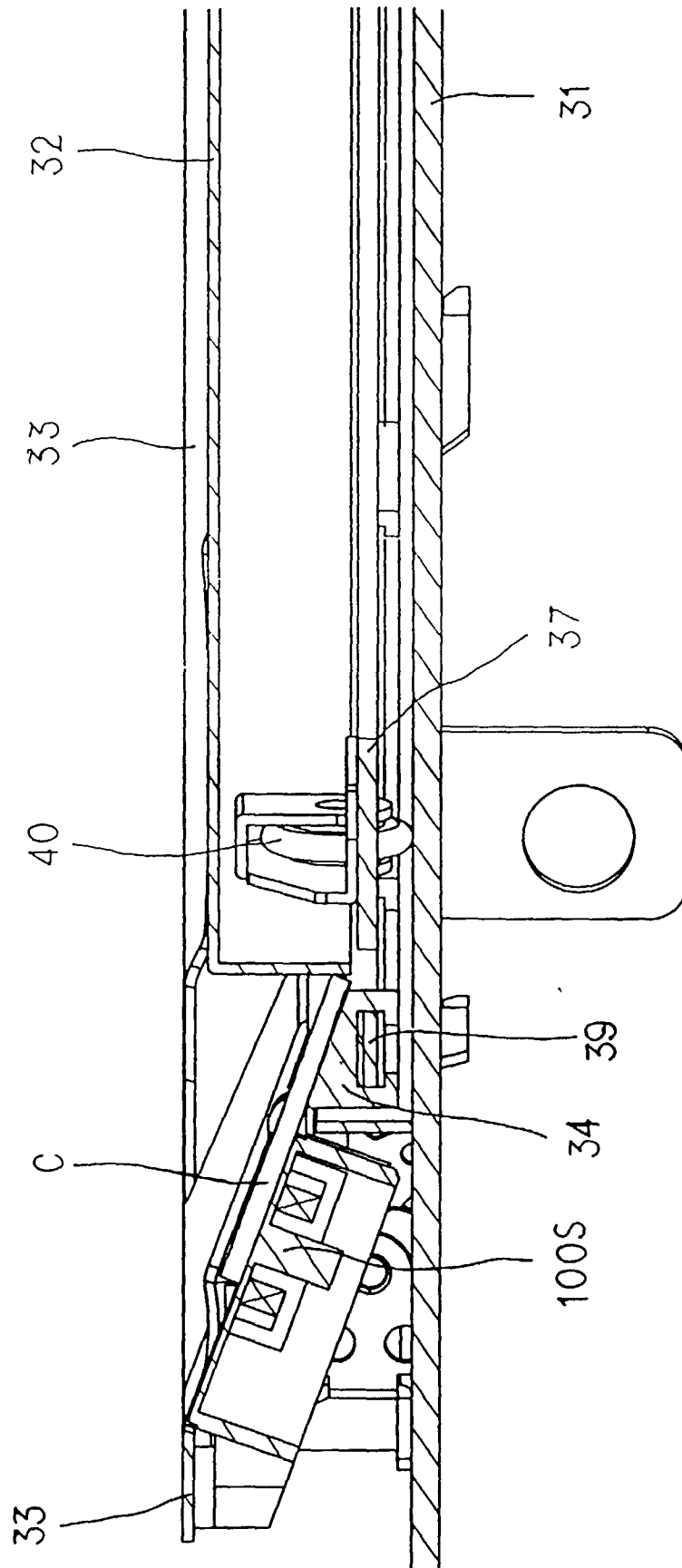
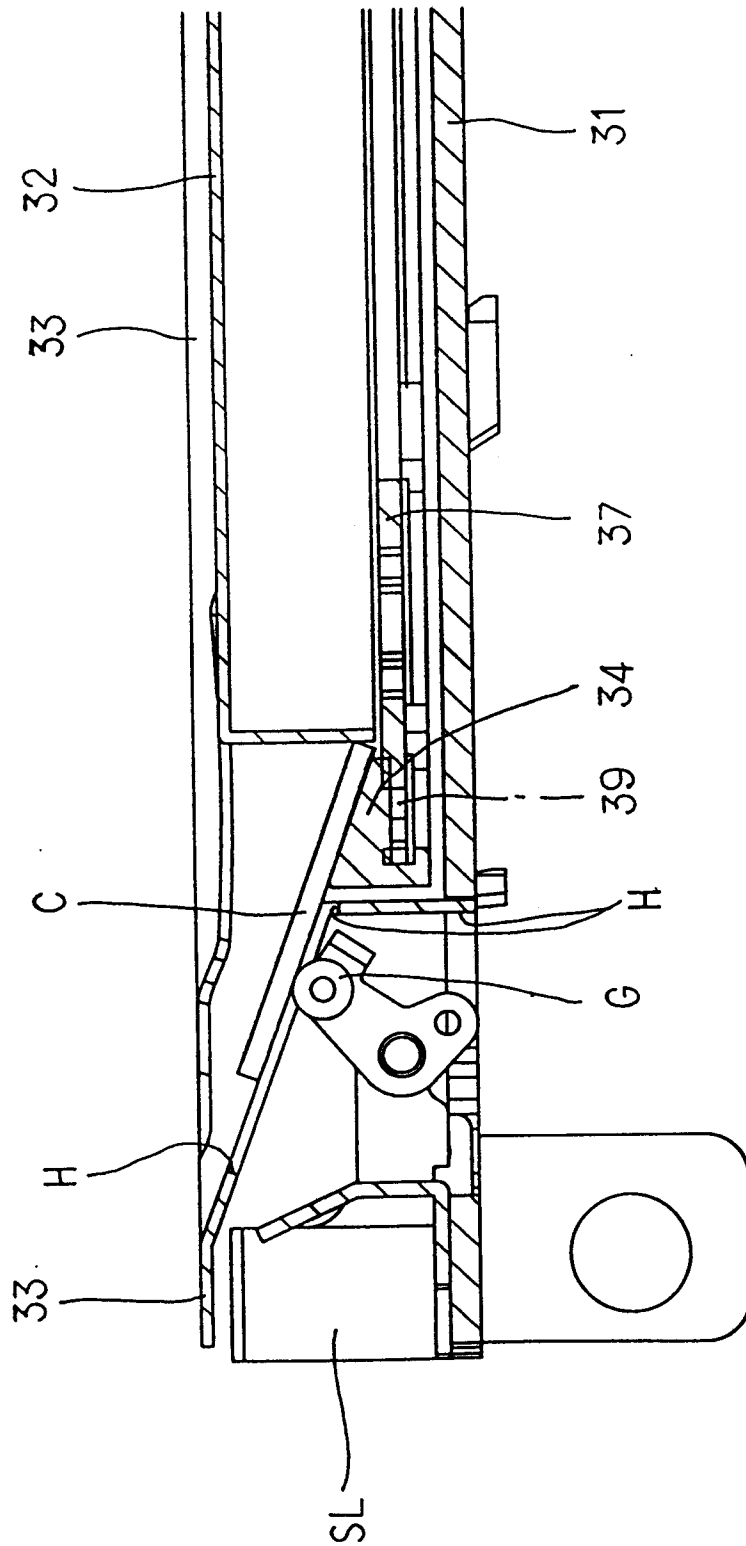


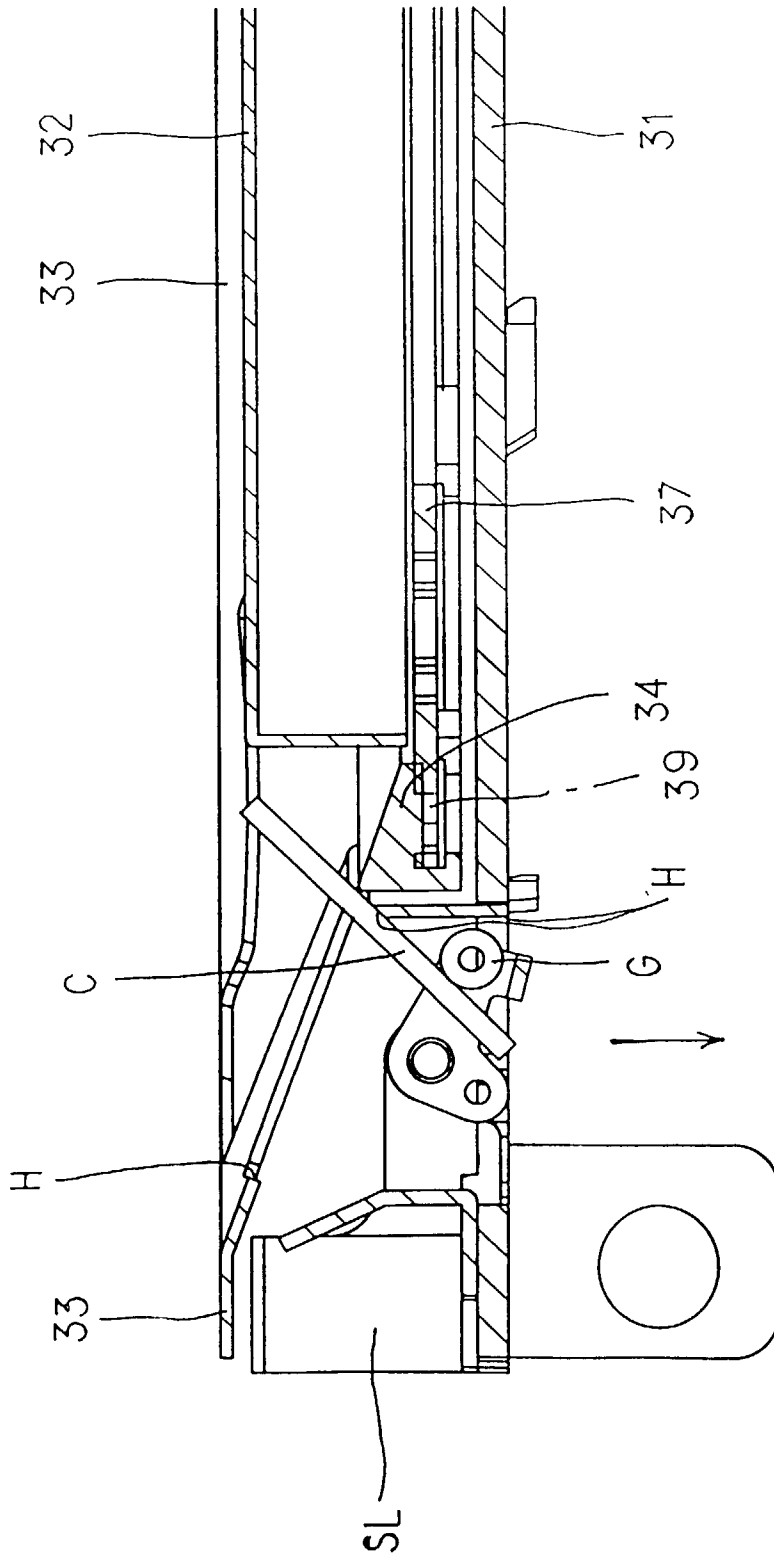
Figure 4



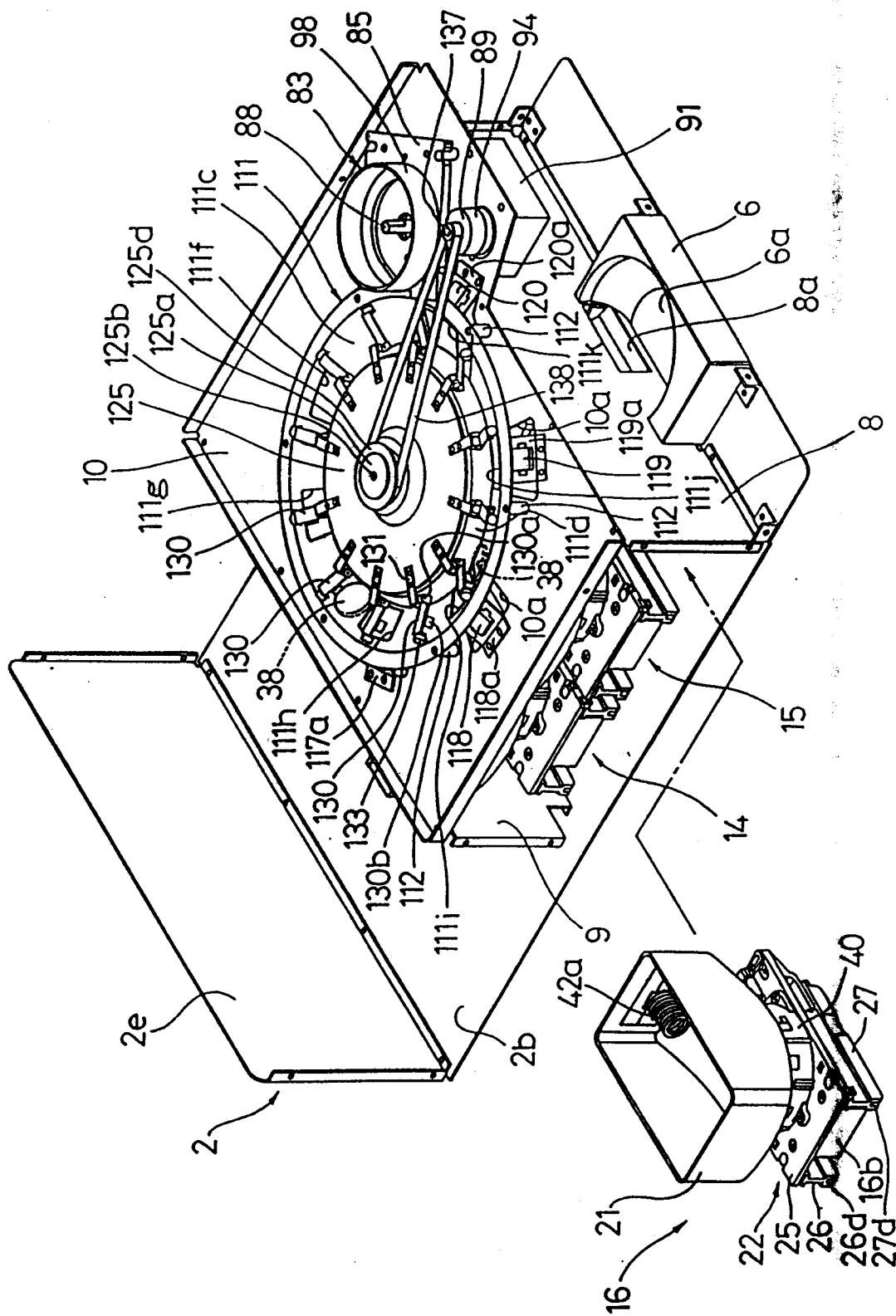
Figur 5



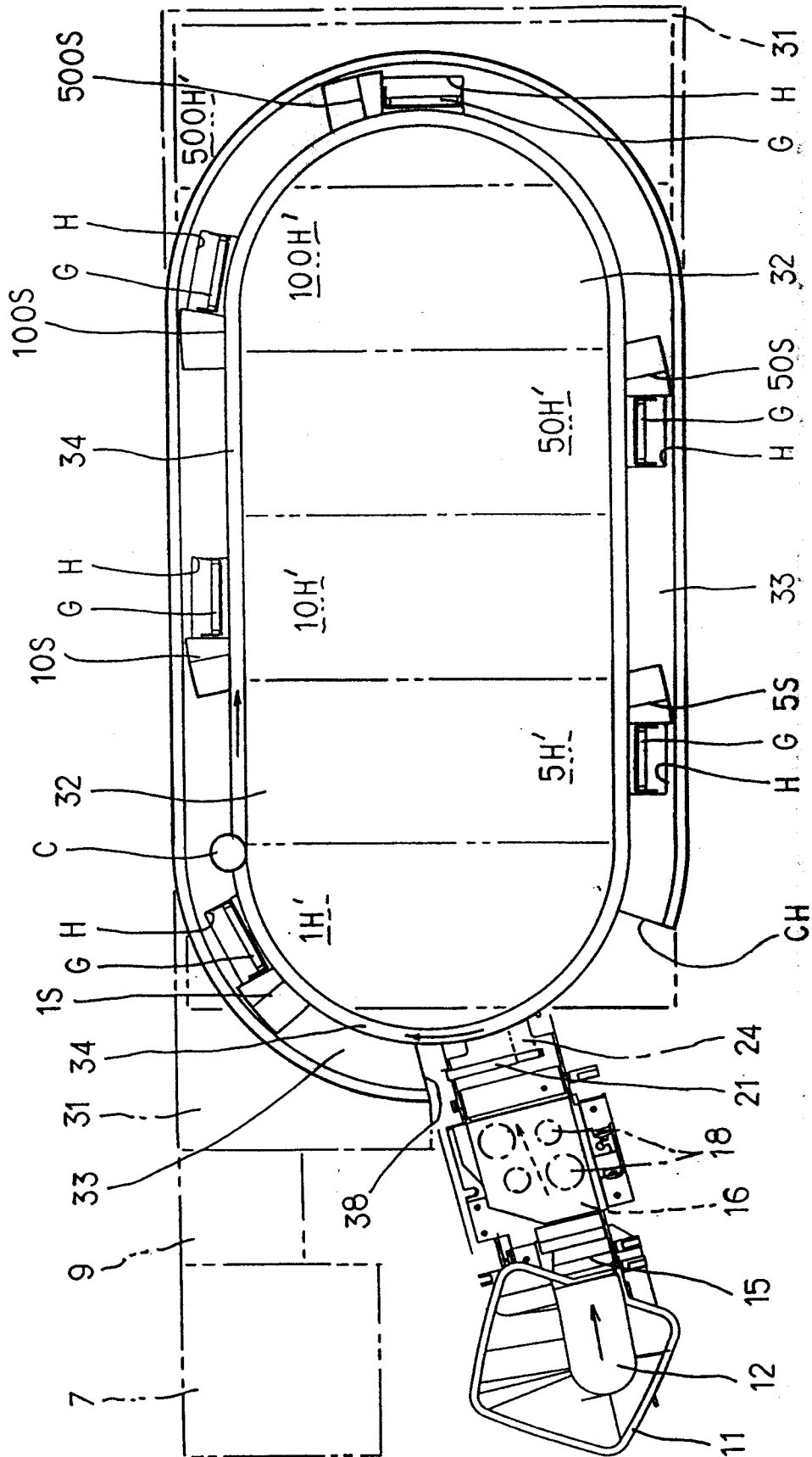
Figur 6



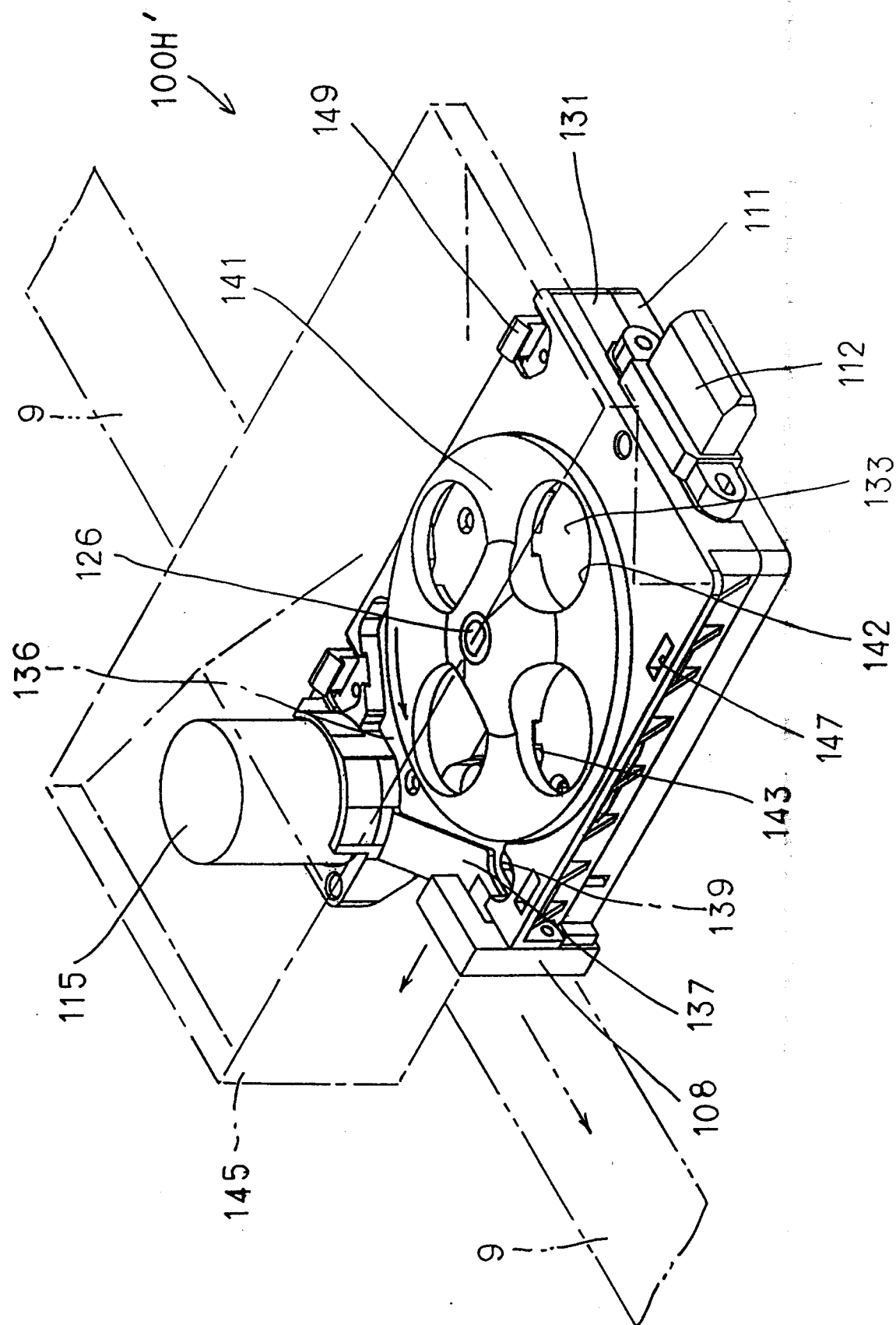
Figur 7



Figur 8



Figur 9



Figur 10

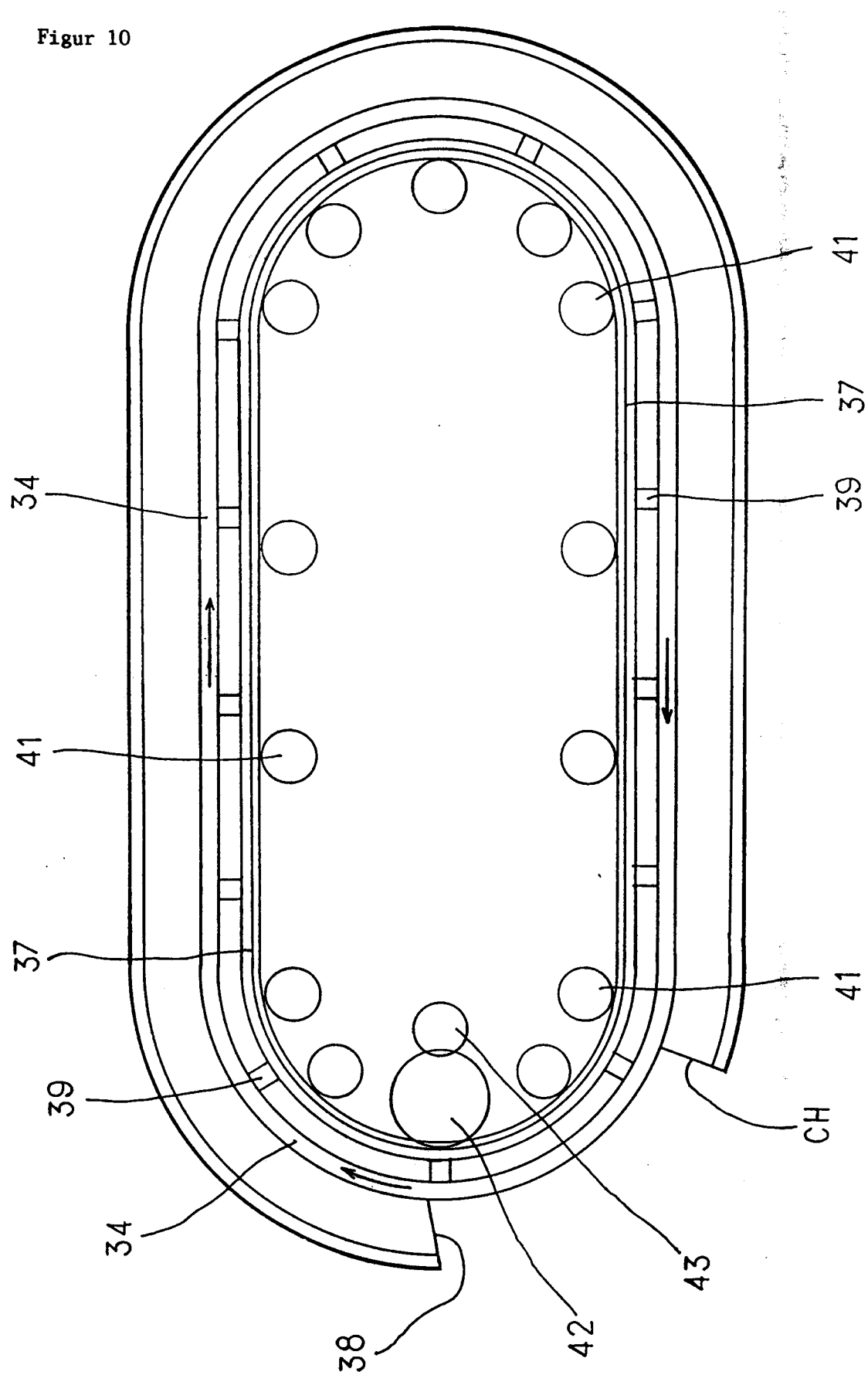
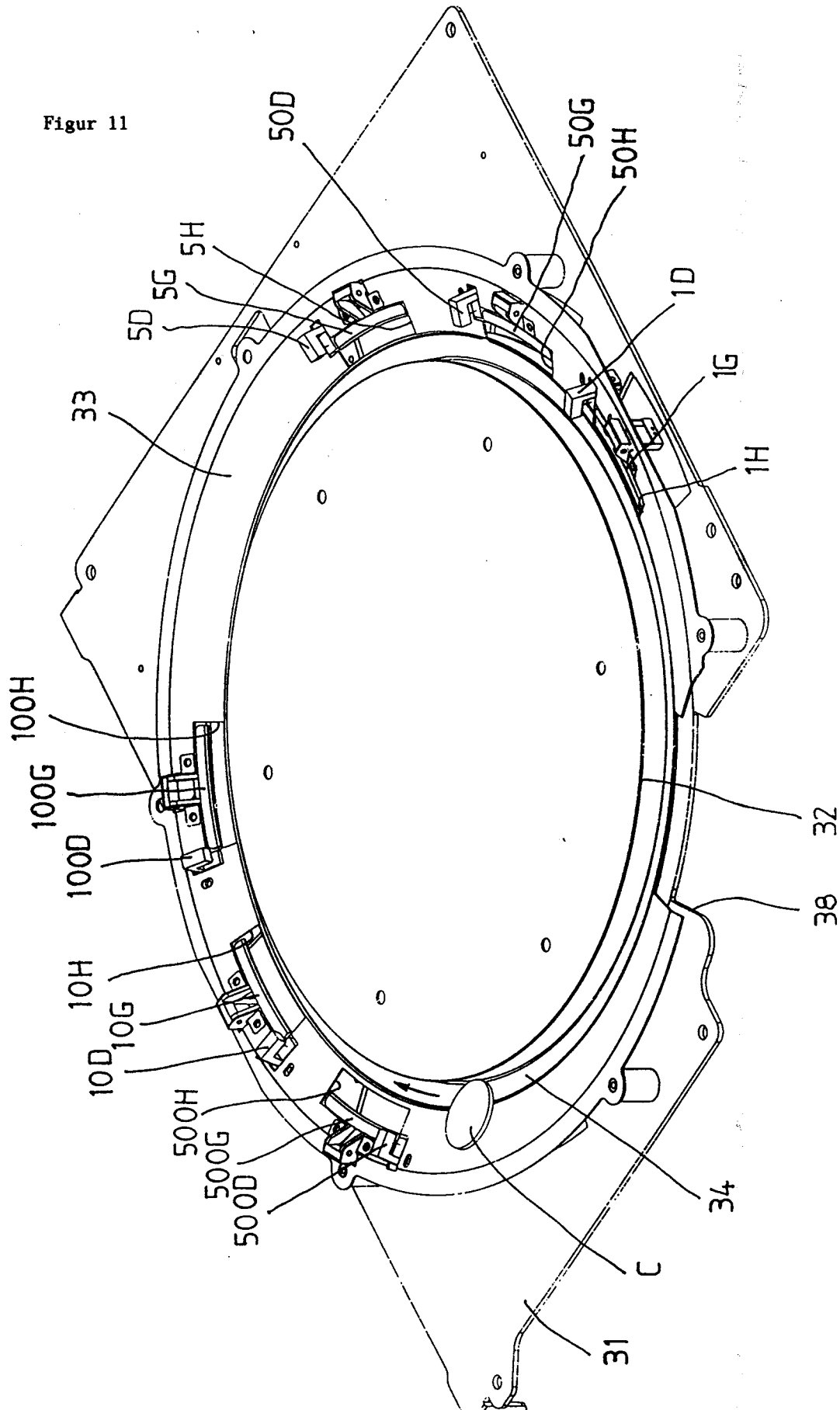
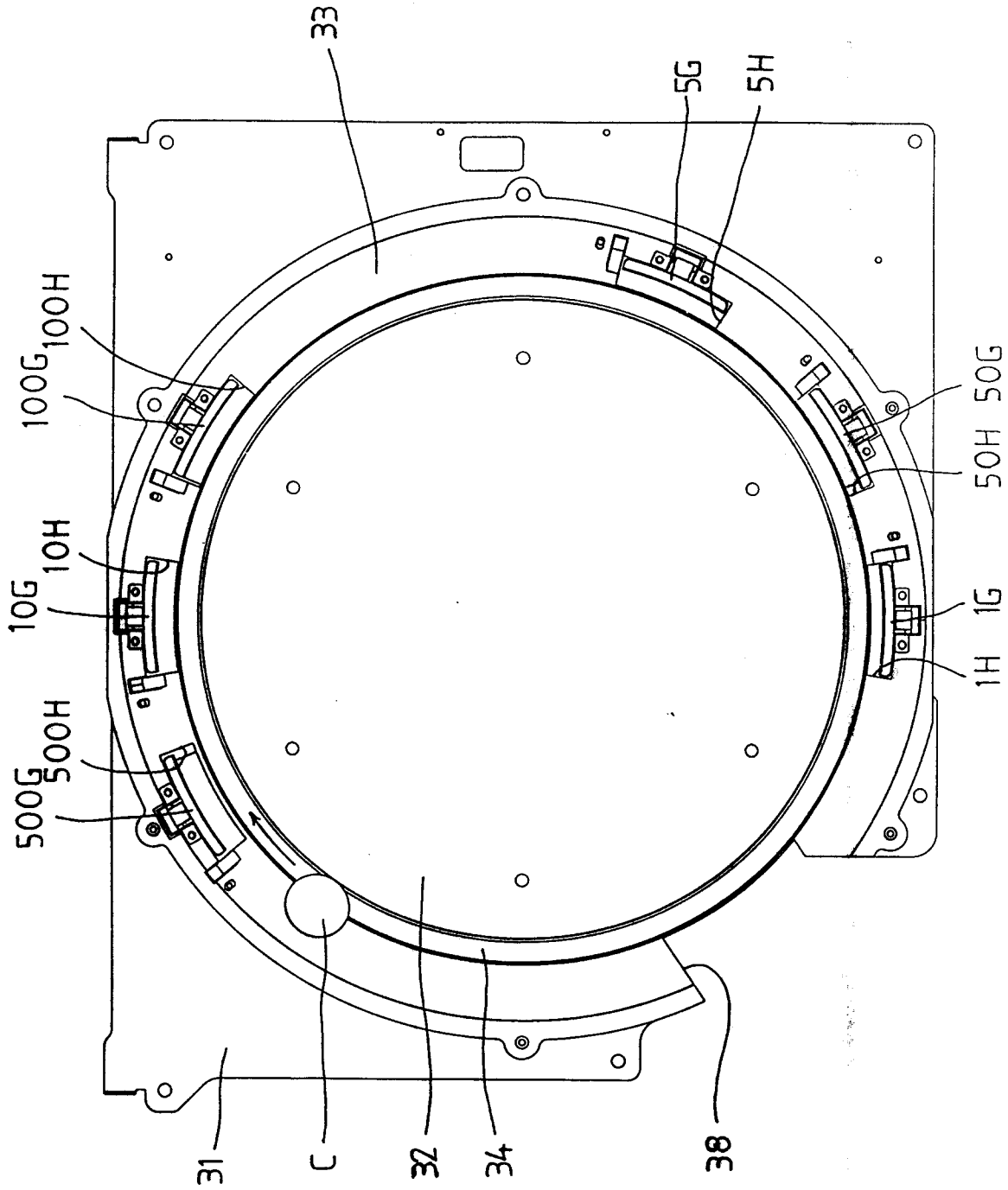


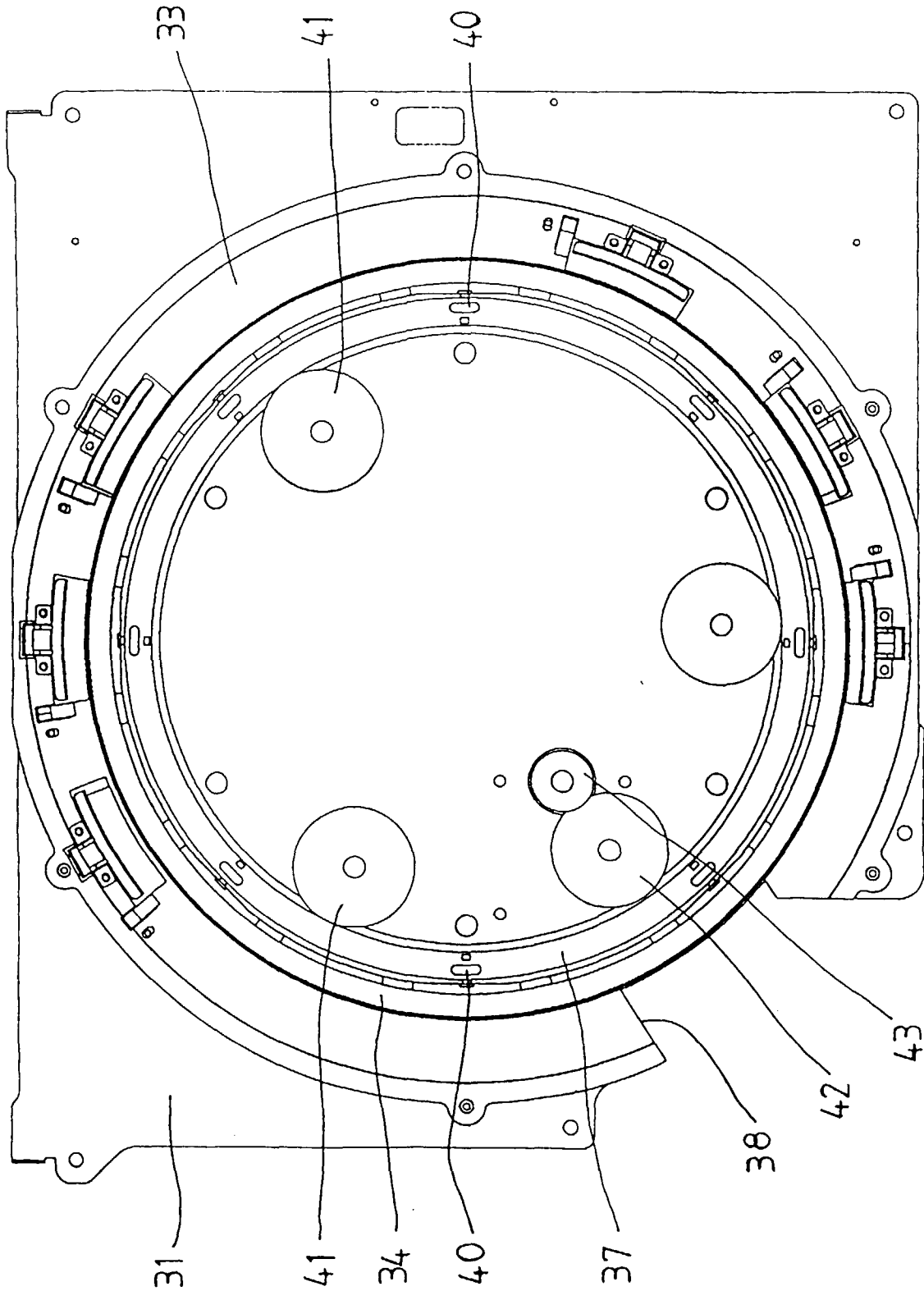
Figure 11



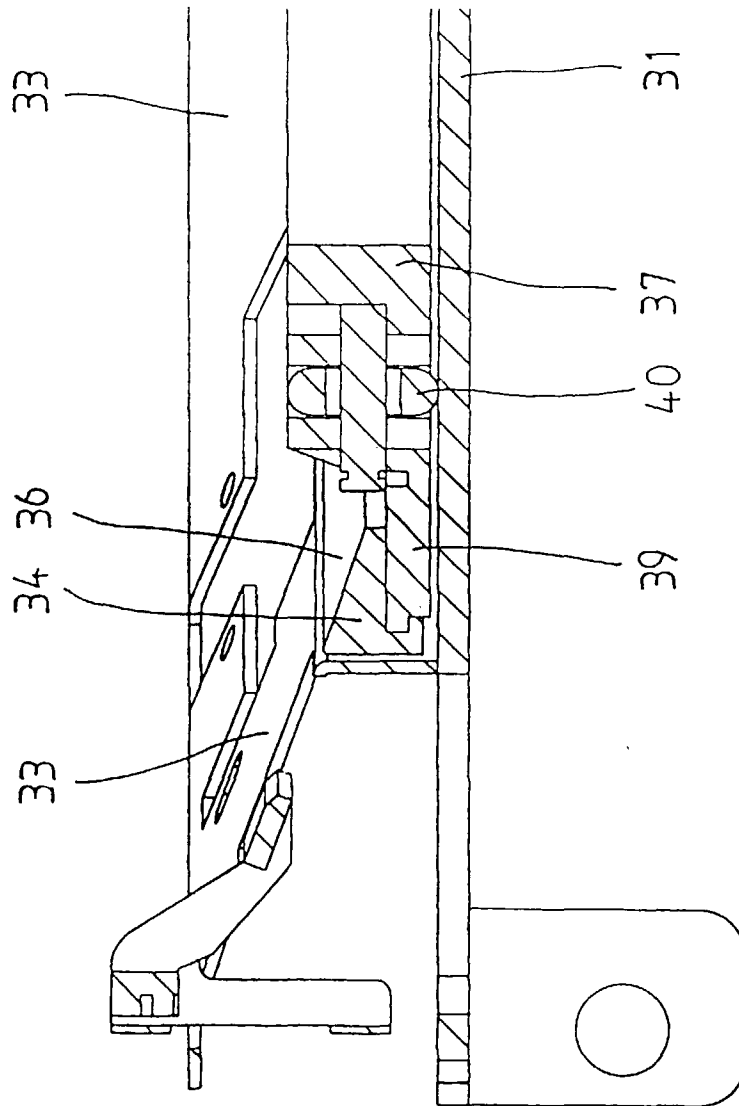
Figur 12



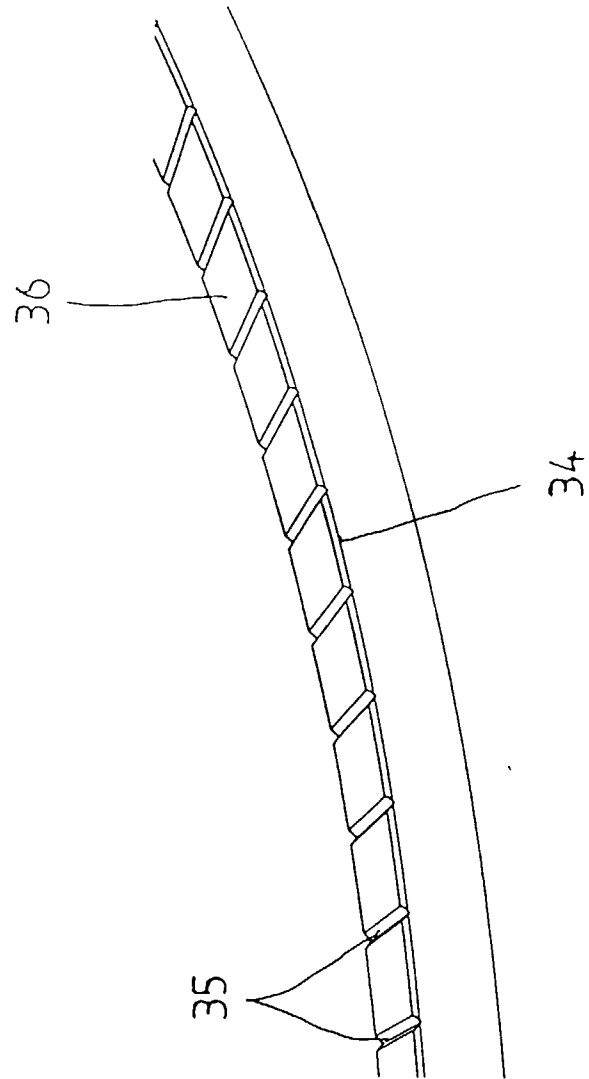
Figur 13



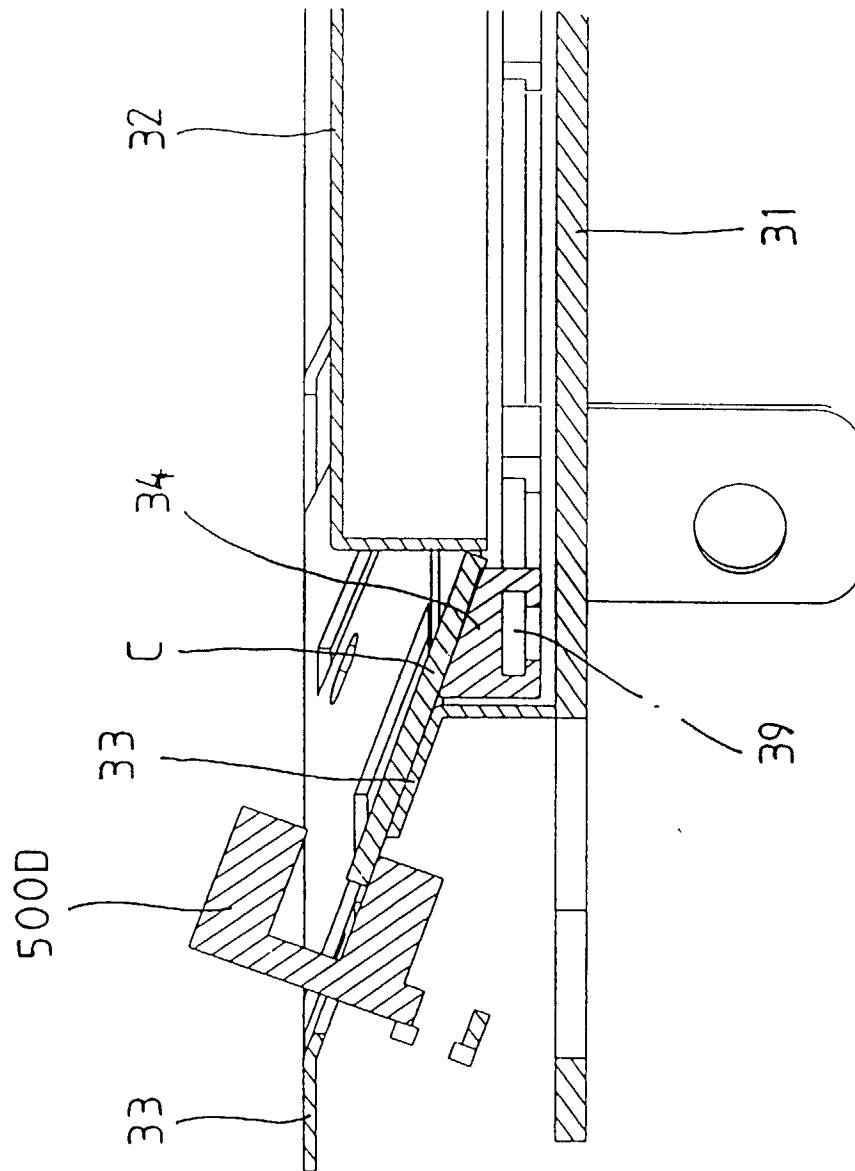
Figur 14



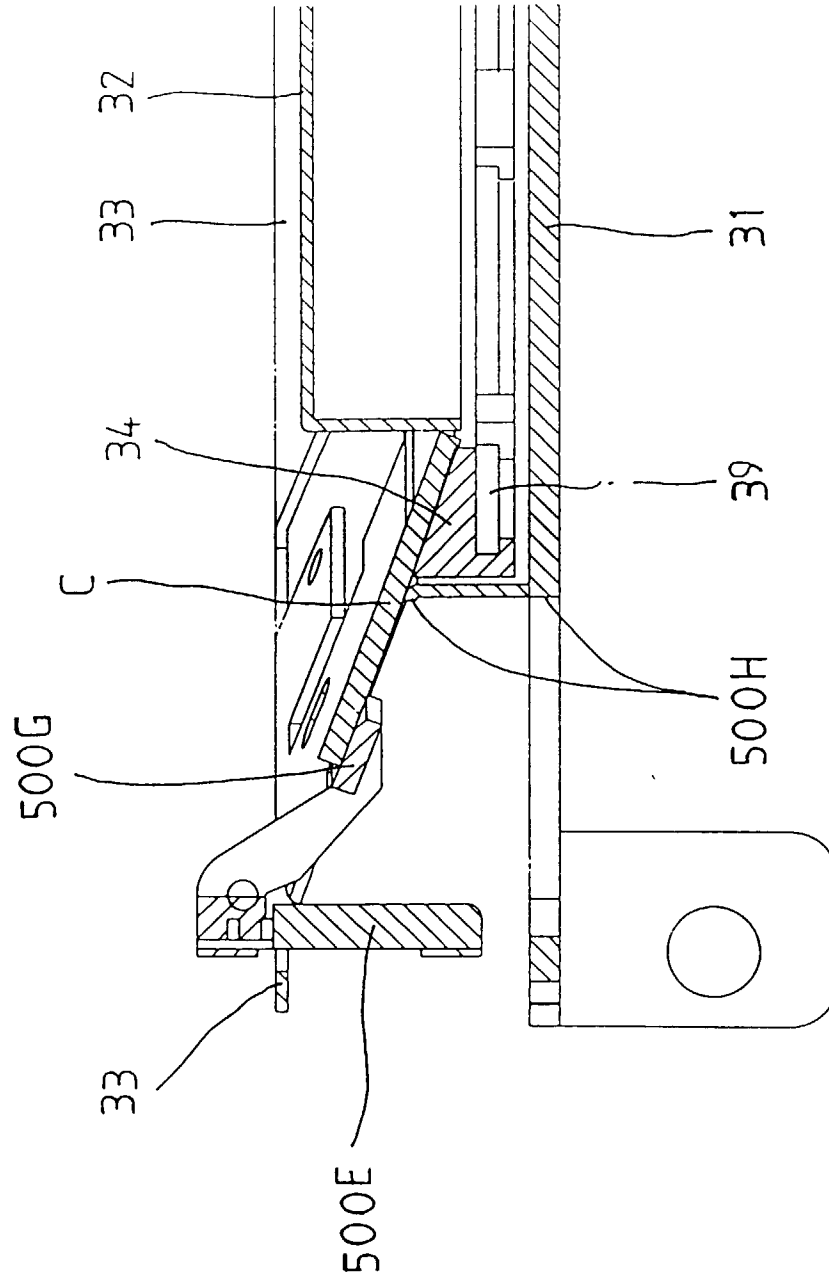
Figur 15



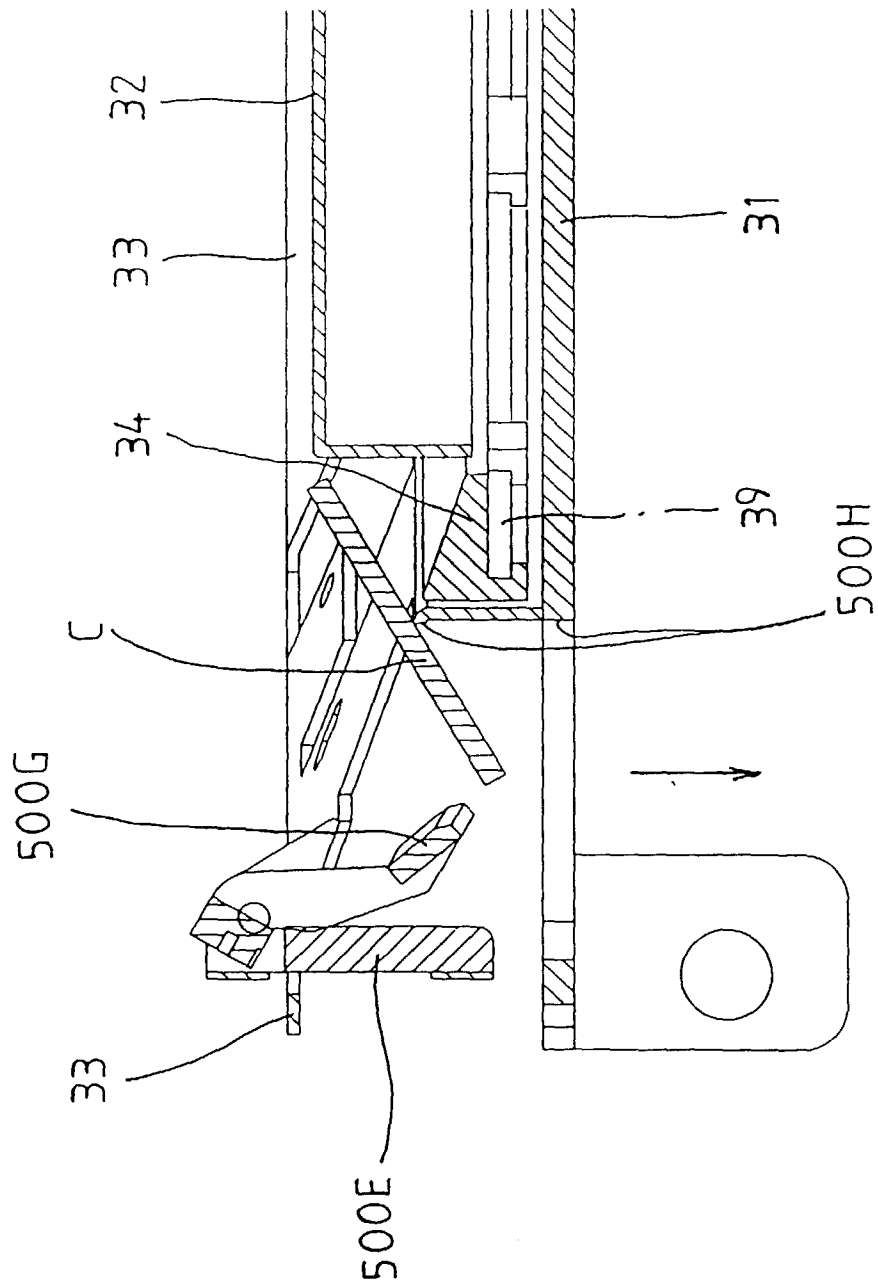
Figur 16



Figur 17



Figur 18





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 10 3285

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Place of search THE HAGUE		Date of completion of the search 29 June 1999	Examiner Neville, D
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