What the invention claimed is:

1. A troubleshooted coin output method used in a coin dispensing and outputting machine comprising a machine main unit and a plurality of coin tubes arranged in a first group and a second group, said machine main unit comprising a coin dispensing unit, a coin hopper and a circuit module, said coin dispensing unit comprising a coin inlet, said coin hopper comprising a driver circuit, a plurality of motors, a plurality of coin-pushing modules and a plurality of sensors, said circuit module comprising multiple sets of sensors, a control circuit and a display unit, the troubleshooted coin output method comprising the steps of:

(a1) starting initialization before coin output;

(a2) counting the amount of coins to be outputted from said coin tubes subject to the amount of money to be given;

(a3) executing a cross-allocation coin output action to output coins from said coin tubes;

(a4) determining whether or not the cross-allocation coin output action has been done, and then proceeding to step (a5) if the action is not done, or step (a9) if the action is done;

(a5) determining the normality of the function of said motors to move said coin-pushing module, and then returning to step (a4) if the function is normal, or proceeding to step (a6) if the function is abnormal;

(a6) checking the abnormality of all said motors, and then proceeding to step (a7) if all said motors are abnormal, or step (a8) if all said motors are not all abnormal;

(a7) stopping the operation of the machine;

(a8) stopping executing the action to output coins from said coin tubes, and then counting the rest amount to be outputted, and then returning to step (a2);

(a9) ending the coin output operation and returning to the standby mode.

2. The troubleshooted coin output method as claimed in claim 1, wherein when entered step (a2), said control circuit of said circuit module counts the amount of coins to be outputted from said coin tubes subject to the amount of money to be given, and then drives said coin hopper to output coins from said coin tubes or to stop outputting coins.

3. The troubleshooted coin output method as claimed in claim 1, wherein when determining the normality of the function of said motors to move said coin-pushing module during step (a5), said control circuit of said circuit module runs subject to the steps of:

(b1) driving said motor in trouble to rotate the associating said coin-pushing modules to move the associating said coin pusher to the sensor of said coin hopper at a start-point;

(b2) determining whether or not said coin pusher has been moved to the sensor at said start-point, and then proceeding to step (b3) if negative, or step (b5) if positive;

(b3) determining whether or not said coin pusher is moved to the sensor at said start-point within the set length of time, and then proceeding to step (b4) if negative, or step (b5) if positive;

(b4) feeding back a motor fault signal;

(b5) driving said motor to rotate the associating said coin-pushing module to move the associating said coin pusher to the sensor at said start-point;

(b6) determining whether or not said coin pusher is moved to the sensor at said start-point within the set length of time? And then returning to step (b4) if negative, or proceeding to step (b7) if positive;

(b7) driving said motor to rotate the associating said coin-pushing module to move the associating said coin pusher to the sensor at said start-point;

(b8) determining whether or not said coin pusher has been moved to the sensor at said start-point within the set length of time, and then returning to step (b4) if negative, or proceed to step (b9) if positive;

(b9) executing another cross-allocation coin output action to

output coins from the other said coin tubes.

4. The troubleshooted coin output method as claimed in claim 3, wherein when determining the normality of the function of said motors to move said coin-pushing module during step (a5), said circuit module checks said driver circuit of said coin hopper to determine an abnormality of said motors by: driving said sensors of said coin hopper to detect movement of each said coin pusher from said start-point to an end-point.

5. The troubleshooted coin output method as claimed in claim 1, wherein when entering step (a7) to stop the operation of the machine, said control circuit of said circuit module drives said display unit to indicate the abnormality by means of color lights, subtitles, text or symbols.

6. The troubleshooted coin output method as claimed in claim 1, wherein when coins are fed into said coin inlet of said coin dispensing unit, said coin dispensing unit runs a cross-allocation coin dispensing action to dispense coins into said coin tubes subject to the steps of:

(c01) start;

(c02) said coin dispensing unit determines whether or not coins enters said coin inlet, and then said coin dispensing unit proceeding to step (c03) if coins enters said coin inlet, or returning to step (c01) if no coin enters said coin inlet;

(c03) said coin dispensing unit validating the authenticity and value of each entered coin, and then said coin dispensing unit proceeding to step (c04) if any entered coin is a counterfeit coin, or step (c05) if each entered coin is a real coin;

(c04) said coin dispensing unit returning each counterfeit coin, and then said coin dispensing unit returning to step (c01);

(c05) said coin dispensing unit starting coin inlet path initialization;

(c06) said sensors of said circuit module detecting whether or not the storage of coins in said coin tubes of said first group reaches the full-level, and then, said coin dispensing unit proceeding to step (c07) if negative, or step (c09) if positive;

(c07) determining whether or not the flag to prohibit entering of coins into said coin tubes of said first group has been created, and then said coin dispensing unit proceeding to step (c08) if the flag is not created, or step (c09) if the flag is created;

(c08) said coin dispensing unit setting the coin inlet path to enter said coin tubes of said first group;

(c09) said sensors of said circuit module detecting whether or not the storage of coins in said coin tubes of said second group

reaches the full-level, and then, said coin dispensing unit proceeding to step (c10) if negative, or step (c12) if positive;

(c10) determining whether or not the flag to prohibit entering of coins into said coin tubes of said second group is created, and then said coin dispensing unit proceeding to step (c11) if the flag is not created, or step (c12) if the flag is created;

(c11) said coin dispensing unit setting the coin inlet path to enter said coin tubes of said second group;

(c12) said coin dispensing unit setting the coin inlet path to enter a predetermined coin box.

7. The troubleshooted coin output method as claimed in claim 1, wherein when coin hopper executes the cross-allocation coin output action to output coins from said coin tubes, the method drives said coin dispensing and outputting machine to run subject to the steps of:

(d1) start;

(d2) said coin hopper starting initialization;

(d3) said sensors of said circuit module detecting whether or not said coin tubes of said first group have coins stored therein, and then, proceeding to step (d4) if said coin tubes have coins stored therein, or step (d5) if said coin tubes are empty;

(d4) said circuit module determining whether or not the flag to prohibit entering of coins into said coin tubes of said first group is created, and then, proceeding to step (d5) if the flag is created, or step (d8) if the flag is not created.

(d5) said sensors of said circuit module detecting whether or not said coin tubes of said second group have coins stored therein, and then, proceeding to step (d6) if said coin tubes have coins stored therein, or step (d7) if said coin tubes are empty;

(d6) said circuit module determining whether or not the flag to prohibit entering of coins into said coin tubes of said second group is created, and then, proceeding to step (d7) if the flag is created, or step (d8) if the flag is not created;

(d7) allowing output of coins of a different value from said coin tubes;

(d8) executing coin output;

(d9) ending the coin output action.

8. The troubleshooted coin output method as claimed in claim 1, wherein said coin dispensing unit comprises a coin validator module adapted to validate the authenticity and value of each entered coin, and a coin dispensing module adapted to guide each entered coin to one said coin tube.

9. The troubleshooted coin output method as claimed in

claim 1, wherein each said motor has an output shaft thereof coupled to a gear train that is coupled to a gearwheel of one said coin-pushing module, and is controlled by said driver circuit to rotate said gear train and said gearwheel through a predetermined angle, causing a coin pusher at said gearwheel to push one coin out of a bottom side of one said coin tube laterally.

10. The troubleshooted coin output method as claimed in claim 1, wherein said circuit module comprises multiple sets of sensors respectively mounted around the outer perimeters of said coin tubes to detect storage coins in said coin tubes in low-level or full-level, a control circuit electrically coupled with said multiple sets of sensors to receive detection signals from the sensors of said circuit module and to control on/off of said coin hopper subject to the detection results of the sensors of said circuit module

What the invention claimed is:

1. A troubleshooted coin output method used in a coin dispensing and outputting machine comprising a machine main unit and a plurality of coin tubes arranged in a first group and a second group, said machine main unit comprising a coin dispensing unit, a coin hopper and a circuit module, said coin dispensing unit comprising a coin inlet, said coin hopper comprising a driver circuit, a plurality of motors, a plurality of coin-pushing modules and a plurality of sensors, said circuit module comprising multiple sets of sensors, a control circuit and a display unit, the troubleshooted coin output method comprising the steps of:

(a1) starting initialization before coin output;

(a2) counting the amount of coins to be outputted from said coin tubes subject to the amount of money to be given;

(a3) executing a cross-allocation coin output action to output coins from said coin tubes;

(a4) determining whether or not the cross-allocation coin output action has been done, and then proceeding to step (a5) if the action is not done, or step (a9) if the action is done;

(a5) determining the normality of the function of said motors to move said coin-pushing module, said control circuit of said circuit module running subject to the steps of:

(b1) driving said motor to rotate the associating said

coin-pushing modules to move the associating said coin pusher to the sensor of said coin hopper at a start-point;

(b2) determining whether or not said coin pusher has been moved to the sensor at said start-point, and then proceeding to step (b3) if negative, or step (b5) if positive;

(b3) determining whether or not said coin pusher is moved to the sensor at said start-point within the set length of time, and then proceeding to step (b4) if negative, or step (b5) if positive;

(b4) said motor failing in rotating the associating said coin-pushing module, feeding back a motor fault signal, and then proceeding to step (a6);

(b5) driving said motor to rotate the associating said coin-pushing module to move the associating said coin pusher to the sensor at said start-point;

(b6) determining whether or not said coin pusher is moved to the sensor at said start-point within the set length of time, and then returning to step (b4) if negative, or proceeding to step (b7) if positive;

(b7) driving said motor to rotate the associating said coin-pushing module to move the associating said

coin pusher to the sensor at said start-point;

(b8) determining whether or not said coin pusher has been moved to the sensor at said start-point within the set length of time, and then returning to step (b4) if negative, or proceed to step (b9) if positive;

(b9) said motor succeeding in rotating the associating said coin-pushing module, executing another cross-allocation coin output action to output coins from the other said coin tubes, and then proceeding to step (a4);

(a6) checking the abnormality of all said motors, and then proceeding to step (a7) if all said motors are abnormal, or step (a8) if all said motors are not all abnormal;

(a7) stopping the operation of the machine;

(a8) stopping executing the action to output coins from said coin tubes, and then counting the rest amount to be outputted, and then returning to step (a2);

(a9) ending the coin output operation and returning to the standby mode.

2. The troubleshooted coin output method as claimed in claim 1, wherein when entered step (a2), said control circuit of said circuit module counts the amount of coins to be outputted from said coin tubes subject to the amount of money to be given, and

then drives said coin hopper to output coins from said coin tubes or to stop outputting coins.

3. The troubleshooted coin output method as claimed in claim 1, wherein when determining the normality of the function of said motors to move said coin-pushing module during step (a5), said circuit module checks said driver circuit of said coin hopper to determine an abnormality of said motors by: driving said sensors of said coin hopper to detect movement of each said coin pusher from said start-point to an end-point.

4. The troubleshooted coin output method as claimed in claim 1, wherein when entering step (a7) to stop the operation of the machine, said control circuit of said circuit module drives said display unit to indicate the abnormality by means of color lights, subtitles, text or symbols.

5. The troubleshooted coin output method as claimed in claim 1, wherein when coins are fed into said coin inlet of said coin dispensing unit, said coin dispensing unit runs a cross-allocation coin dispensing action to dispense coins into said coin tubes subject to the steps of:

(c01) start;

(c02) said coin dispensing unit determines whether or not coins enters said coin inlet, and then said coin dispensing unit

proceeding to step (c03) if coins enters said coin inlet, or returning to step (c01) if no coin enters said coin inlet;

(c03) said coin dispensing unit validating the authenticity and value of each entered coin, and then said coin dispensing unit proceeding to step (c04) if any entered coin is a counterfeit coin, or step (c05) if each entered coin is a real coin;

(c04) said coin dispensing unit returning each counterfeit coin, and then said coin dispensing unit returning to step (c01);

(c05) said coin dispensing unit starting coin inlet path initialization;

(c06) said sensors of said circuit module detecting whether or not the storage of coins in said coin tubes of said first group reaches the full-level, and then, said coin dispensing unit proceeding to step (c07) if negative, or step (c09) if positive;

(c07) determining whether or not the flag to prohibit entering of coins into said coin tubes of said first group has been created, and then said coin dispensing unit proceeding to step (c08) if the flag is not created, or step (c09) if the flag is created;

(c08) said coin dispensing unit setting the coin inlet path to enter said coin tubes of said first group;

(c09) said sensors of said circuit module detecting whether or not the storage of coins in said coin tubes of said second group reaches the full-level, and then, said coin dispensing unit proceeding to step (c10) if negative, or step (c12) if positive;

(c10) determining whether or not the flag to prohibit entering of coins into said coin tubes of said second group is created, and then said coin dispensing unit proceeding to step (c11) if the flag is not created, or step (c12) if the flag is created;

(c11) said coin dispensing unit setting the coin inlet path to enter said coin tubes of said second group;

(c12) said coin dispensing unit setting the coin inlet path to enter a predetermined coin box.

6. The troubleshooted coin output method as claimed in claim 1, wherein when coin hopper executes the cross-allocation coin output action to output coins from said coin tubes, the method drives said coin dispensing and outputting machine to run subject to the steps of:

(d1) start;

(d2) said coin hopper starting initialization;

(d3) said sensors of said circuit module detecting whether or not said coin tubes of said first group have coins stored therein, and then, proceeding to step (d4) if said coin tubes

have coins stored therein, or step (d5) if said coin tubes are empty;

(d4) said circuit module determining whether or not the flag to prohibit entering of coins into said coin tubes of said first group is created, and then, proceeding to step (d5) if the flag is created, or step (d8) if the flag is not created.

(d5) said sensors of said circuit module detecting whether or not said coin tubes of said second group have coins stored therein, and then, proceeding to step (d6) if said coin tubes have coins stored therein, or step (d7) if said coin tubes are empty;

(d6) said circuit module determining whether or not the flag to prohibit entering of coins into said coin tubes of said second group is created, and then, proceeding to step (d7) if the flag is created, or step (d8) if the flag is not created;

(d7) allowing output of coins of a different value from said coin tubes;

(d8) executing coin output;

(d9) ending the coin output action.

7. The troubleshooted coin output method as claimed in claim 1, wherein said coin dispensing unit comprises a coin validator module adapted to validate the authenticity and value of each entered coin, and a coin dispensing module adapted to guide

each entered coin to one said coin tube.

8. The troubleshooted coin output method as claimed in claim 1, wherein each said motor has an output shaft thereof coupled to a gear train that is coupled to a gearwheel of one said coin-pushing module, and is controlled by said driver circuit to rotate said gear train and said gearwheel through a predetermined angle, causing a coin pusher at said gearwheel to push one coin out of a bottom side of one said coin tube laterally.

9. The troubleshooted coin output method as claimed in claim 1, wherein said circuit module comprises multiple sets of sensors respectively mounted around the outer perimeters of said coin tubes to detect storage coins in said coin tubes in low-level or full-level, a control circuit electrically coupled with said multiple sets of sensors to receive detection signals from the sensors of said circuit module and to control on/off of said coin hopper subject to the detection results of the sensors of said circuit module