

COIN COUNTER

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The present invention relates to a coin counter which enables a cashier of a retail shop, etc., to sort and count
10 coins put in a cash register to find the total amount of the coins at a glance.

Retailers, wholesalers, restaurants, etc., who handle
15 cash usually use cash registers to put coins therein according to their kind. At fixed intervals or after business hours, coins of each kind stored in the cash registers are counted.

The cash register is generally provided with a drawer
20 divided into small sections for receiving respective kinds of coins. The coins in the register are loose but stored according to their kind. To count the coins, a cashier takes the coins out of the sections and forms blocks of coins, each block containing ten coins. Then, the cashier
25 counts the number of blocks to find the total number of the coins, and multiplies the total number by an amount of each coin to calculate the total amount of the coins.

After calculating the total amount of coins of each kind, the total amount of all kinds of coins is calculated.
30 This counting and calculating works take at least four to five minutes in total.

If these time consuming works are done during business hours, the cash registers shall be stopped during the works to give customers serious inconveniences.

After the completion of the counting and calculating works, the coins are usually stored in a coin case 2 shown in Fig. 1. The coin case 2 has coin storing portions 1a to 1f for respective kinds of coins. Each of the coin storing portions has a scale on its peripheral portion to indicate the number of stored coins. This coin case 2 is not for a counting purpose but only for a storing purpose. And the counting is manually done on a desk, etc.

It is possible to prepare a transparent hollow cylindrical case for each kind of coins. The periphery of the case is provided with a scale that indicates the number of coins stored in the case. In use, coins are successively stacked in the case, and a graduation corresponding to the top of the coins is read to know the number of the stacked coins. To prevent the coins from stopping in the middle of the case or from taking an upright state (a not-stacked state), the coins shall carefully and horizontally be dropped in the case. To take the coins out of the case, the case shall be turned upside down.

This sort of conventional coin counter requires such troublesome works in putting in and out coins to and from the coin counter. In addition, the scale on the periphery of the case only indicates the number of coins stored therein so that it is necessary to multiply the number of coins by the amount of a coin to know the total amount of the coins.

Coin cases for kinds of coins are convenient if they are collectively arranged. However, since the cases are separately turned upside down to take the coins out of the cases, the cases shall be arranged such that they can be handled independently of each other. This may complicate the handling, increase the costs and causes loss of the cases.

In this way, the coin counting work of the prior art coin case is troublesome even for skilled persons and needs to be improved.

5 In addition, when the number of coins is multiplied by the value of a coin to find the total value of the coins, a miscalculation may occur and cause trouble.

10 To solve these problems, an object of the present invention is to provided a coin counter which can greatly improve the efficiency of cash handling work such as taking coins out of a register, counting the number of the coins and calculating the total value of the coins.

15 In accordance with a first aspect of the invention, a coin counter comprises a member having at least one longitudinal recess for receiving a stack of coins of a certain kind; a plurality of transverse graduations which are longitudinally offset by the thickness of one coin; and, a number indicating portion formed just above each graduation for indicating a total value of coins stacked in the recess up to that graduation, the number indicating
20 portions being formed in longitudinal rows with the number indicating portions of adjacent graduations being in different rows.

In accordance with a second aspect of the invention, a coin counter comprises a member having at least one
25 longitudinal recess for receiving a stack of coins of a certain kind; a plurality of longitudinal rows of transverse graduations with the graduations on each row being longitudinally offset below the graduations in another row by the thickness of one coin; and, a number
30 indicating portion formed just above each graduation for indicating a total value of coins stacked in the recess up to that graduation.

35 The interval between the adjacent graduations corresponds to the thickness of each coin to be stored in the corresponding recess of the coin counter. An interval between a coin stopper disposed on the bottom of each recess and lowermost one of the graduations also

corresponds to the thickness of the coin. Just above each graduation, a numeral that indicates the total amount of coins to be stacked up to the graduation in question is written.

5 The graduations are equally spaced from each other such that the top surface of successively stacked coins on the coin stopper aligns with one of the graduations and such that a numeral appearing just above the top coin indicates the total amount of the stacked coins.

10 Only by successively stacking coins in the recesses according to their kind and only by seeing numerals just above top coins, the total amounts of coins stacked in the respective recesses can easily be known. Troublesome counting work is never needed. Even an unskilled cashier
15 can finish the counting work correctly and immediately, irrespective of his or her skill.

In the accompanying drawings:

Fig. 1 is a perspective view showing a coin counter according to a prior art;

20 Fig. 2 is a perspective view generally showing a coin counter according to an embodiment of the present invention;

Fig. 3 is a plan view of the embodiment shown in Fig. 2;

25 Fig. 4 is a sectional side view of the embodiment shown in Fig. 2;

Fig. 5(a) to 5(d) are views showing respective recesses of the embodiment shown in Fig. 2;

30 Fig. 6 is a view showing a modification of the embodiment shown in Fig. 2;

Figs. 7(a) and 7(b) are perspective views showing a coin counter according to a second embodiment of the inventions; and

35 Fig. 8 is a view showing a coin counter according to a third embodiment of the invention.

Now the embodiments of the present invention will be explained with reference to the drawings.

5 Figure 2 is a perspective view generally showing the first embodiment of the present invention.

 A coin counter 10 comprises a base 3. An upper face 5 of the base 3 is provided with longitudinal recesses 7a to 7f for storing 1-yen to 500-yen coins according to their
10 kind.

 Figure 3 is a plan view and Fig. 4 a sectional side view both showing the embodiment of Fig. 2. Each bottom of the recesses 7a to 7f is provided with graduations of equal intervals. The graduations have numerals, respectively,
15 that increase their values from the bottom to the top.

 As an example, the recess 7a formed on the left end of the base 3 to store 1-yen coins will be explained. At the center of the width of the recess 7a, a center line 20 is drawn to extend longitudinally along the recess 7a. On the
20 left and right sides of the center line 20, graduations B and B' are drawn to alternately extend horizontally. An interval between the adjacent graduations B and B' is twice the thickness of a 1-yen coin. On the right side of the center line 20, an odd number indicating portion is formed,
25 while, on the left side of the center line 20, an even number indicating portion is formed. Each numeral of the number indicating portions represents one graduation B (B') just below the numeral. Below a graduation provided with a numeral "1," a vacancy C is formed to receive a first coin.
30 The height of the vacancy C corresponds to the thickness of one 1-yen coin. Namely, when the first coin is placed on a coin stopper S formed on the bottom of the recess 7a, the numeral 1 will appear just above the first coin.

 Each numeral written on the number indicating portions
35 just above corresponding one of the graduations represents

the total amount of coins stacked up to the corresponding graduation. Namely, the numeral "1" means one yen and "10" means ten yen in the recess 7a.

5 Naturally, it is possible to write the odd numerals on the left side of the center line 20 and the even numbers on the right side of the center line 20.

According to this embodiment, the scale for odd numerals appears on the right side of the center line 20 and the scale for even numerals on the left side of the center line 20. An interval between one graduation B and the adjacent graduation B' is equal to the thickness of a single coin. In other words, an interval between the vertically adjacent graduations (for example, graduations B-1 and B-3) on each side is equal to the thickness of two
15 coins.

The width of each recess corresponds to the diameter of a coin to be stored in the recess. Therefore, when coins are stored in the recess, the graduations and numerals coming under the coins are not visible.

20 The top surface of top one of coins stacked in the recess 7a aligns with one of the left and right graduations B and B', and a numeral on the number indicating portions just above the aligning graduation indicates the total amount of the stacked coins.

25 This will be explained with reference to Figs. 3 and 5. When one 1-yen coin 20a is stacked, the 1-yen coin is received in the vacancy C. Then, the top surface of the coin aligns with the graduation B-1 just under the numeral 1 which appears just above the top surface of the coin to
30 indicate that the total amount of the stacked coin is one yen.

If three 1-yen coins are in the recess 7a as shown in Fig. 5(a), the coins are stacked one upon another from the bottom of the recess 7a. Therefore, the top surface of the
35 third coin from the bottom, i.e., the top surface of the

top coin aligns with the graduation B-3 with numeral 3. Then, it is understood that the total amount of the stacked coins is three yen.

If the coins are 1-yen coins, the number of the coins is identical to the total amount of the coins. However, if the coins are 5-yen coins, the total number of the coins does not tell the total amount of the coins. To cope with this, the present invention puts numerals that indicate the total amounts of stacked coins, just above the graduations. Therefore, only by looking at the numerals written in the respective recesses 7a to 7f, the total amounts of coins stacked in the respective recesses 7a to 7f can be known.

Intervals of the graduations are different for the different recesses 7b to 7f to match with the thicknesses of coins to be stored in the respective recesses, and, therefore, the numerals written above the graduations are different for the respective recesses. However, their basic designs are the same with each other. Therefore, this invention is applicable for counting foreign coins, game coins, etc., having different thicknesses and values, only by providing corresponding graduations and numerals for the respective recesses of the coin counter.

In Fig. 5(b), there are forty-seven 5-yen coins 21a stacked in the recess 7b. The top surface of the 47th coin aligns with a graduation on which a numeral 235 is appearing. Therefore, it is instantaneously known that the total amount of the stacked coins is 235 yen.

Usually, there is no need to know the total number of stacked coins. However, it is possible to also write numerals indicating the numbers of coins along with the numerals representing the amounts of coins.

Figure 5(c) shows the recess 7c for storing 10-yen coins 22a. A numeral appearing just above the top coin is 280 which is visible at a glance to know that the total amount of the stacked coins is 280 yen. Figure 5(d) shows

the recess 7d for storing 500-yen coins 25a. A numeral just above the top 500-yen coin is 8500 that indicates that the total amount of the stacked coins is 8500 yen.

5 Dimension lines and numerals shown at the bottom of Fig. 3 and those shown in Fig. 4 are dimensions of actual designs.

10 As described in the above, a plurality of longitudinal recesses receive various kinds of coins. The upper face of each of the recesses is open. On the bottom of each recess, a centre line is drawn to extend longitudinally along the recess. Horizontal graduations are drawn on the left and right sides of the centre line alternately. An interval between one right graduation and an adjacent left graduation corresponds to the thickness of a coin to be stored in the recess. Above each graduation, a numeral is written on the number indicating portions to indicate the amount of coins stacked up to the level of the graduation. On either side of the centre line of each recess, an interval between the adjacent graduations is equal to the thickness of two coins to be stacked in the recess. The graduations are equally spaced from each other such that the top surface of successively stacked coins on the coin stopper S aligns with one of the graduations and such that a numeral appearing just above the top coin indicates the total amount of the stacked coins.

25 Only by successively stacking coins in the recesses according to their kind and only by seeing numerals just above top coins, the total amounts of coins stacked in the respective recesses can easily be known. Troublesome counting work is never needed. Even an unskilled cashier can finish the counting work correctly within about one minute, irrespective of his or her skill.

30 Further, the present invention can resolve various inconveniences of the conventional coin counters such as a difficulty in putting in and out coins and increased costs.

According to the embodiment, the indications comprising a center line and graduations are written on the bottom of each recess. However, the indications may be formed at other parts such as the side banks of the recess.

5 It is not always necessary to form recesses for all kinds of coins. Even one recess may come under the scope of the invention. Each recess of the invention may have two or more kinds of graduations to cope with different kinds of coins.

10 The coin counter of the invention is preferable to be installed in a vending machine or a cash register to count coins stored in them.

Figure 6 is a view showing a modification in which the present invention is applied to a ruler etc.. In the
15 figure, graduations B are written at intervals of 1 mm. On each of the graduations, a numeral is written.

Generally, the ruler has numerals of 10, 20, 30 and so on at intervals of 10 mm, and no numeral is written on a graduation of every millimeter. The reasons of this are
20 because it is difficult to write a numeral within a small space of 1 mm and because a numeral, even if written, is too small to read it.

According to the modification of Fig. 6, a recess 30 is formed above each graduation B of 1 mm to write a
25 numeral of the size of about 2 mm in two of the recesses 30. Odd numerals and even numerals are alternately written on the left and right sides such that the odd and even numbers are displaced from each other. Therefore, the odd and even numbers can continuously be written with no
30 interference between them.

With this arrangement, graduations of, for example, 6, 12, 18, 24 and so on at intervals of 6 mm starting from a graduation of 1 mm can be plotted easily by calculating these numerals in one's head at first according to addition
35 or multiplication. Then, the calculated numerals will be

found readily on the scale with the help of the numbers written on the scale.

Figures 7(a) and 7(b) are views showing a coin counter according to the second embodiment of the present invention. A cylindrical storage box 50 comprises transparent material such that the contents of the box 50 can be seen from the outside. The storage box 50 comprises two segments 51 and 52. On the surface of the storage box 50, a scale according to the first embodiment is formed.

10 The segments 51 and 52 of the storage box 50 are opened and closed around a pivot portion 50a. Stopping member 53 such as a hook is provided for the storage box 50 to maintain a closed state of the segments 51 and 52.

The stopping means 53 may be realized by various arrangements. Any of them is acceptable if they are suitable for easily open and close the segments 51 and 52.

The storage box 50 is prepared to meet the size of one kind of coin. A storage interior 55 is designed according to the shape and size of the kind of coin. The axial length of the storage interior 55 of the storage box 50 may be set to meet the total length of fifty stacked coins so that one may know that there are fifty coins inside the storage box 50 without seeing the scale written on the storage box, if the storage interior 55 is entirely filled with the coins.

The storage box 50 is used as a box for storing a predetermined number, for example fifty of coins, to eliminate the counting work of coins. To count coins stored in a cash register, etc., after business hours of the day, the coins are firstly stacked in the storage boxes 50 according to their kind. Then, a last storage box may not totally be filled with the coins. Namely, there will be the remnants of coins not divided by fifty. Only this last storage box will be confirmed to see how many coins are stored therein with the aid of numerals above the

graduations written on the storage box (or the coin counter according to the first embodiment).

Since the storage box acts as a casing, there is no need to take the coins out of the storage box, but the
5 storage box with coins may be brought as it is to a bank, etc. Then, a teller of the bank takes the coins out of the storage box to return only the storage box to a person who brought the storage box to the bank.

The material of the storage box is preferable to be
10 resin or mesh which is wholly or partly transparent or semi-transparent such that the total height of coins contained in the storage box can be seen from the outside. If the storage box is made of resin, it may be solidly formed with the same material, including the pivot portion
15 50a.

In the second embodiment, the storage box has been formed in a cylindrical shape. If this shape is inconvenient because it rolls easily, a polygonal columnar shape is acceptable for exterior of the storage box while
20 its interior has a cylindrical shape matching with the shape of a coin.

It is preferable to prepare storage boxes for all kinds of coins, respectively. However, if there is no difference between the thicknesses of coins, one storage
25 box will commonly be used for plural kinds of coins.

In each recess of the coin counter of the first embodiment or in the interior of the storage box 50 shown in Fig. 7, a packaging sheet or bag (preferable to be transparent) may be laid to place coins thereon. After
30 confirming the number of coins with the use of the storage box 50, one can pack the coins with the sheet and take the package out of the storage box 50 to improve handling efficiency of the coins.

Figure 8 is a view showing the third embodiment of the
35 present invention. This is a modification of the scale

formed in the recess as shown in the first embodiment of Fig. 2. or the scale formed on the surface of the storage box of Figs. 7(a) and 7(b).

According to the previous embodiments, one center line
5 is drawn longitudinally along the recess and the number indicating portions are formed on the left and right sides of the center line.

However, according to the third embodiment, two center lines are arranged and three number indicating portions
10 60a, 60b and 60c are arranged at sides of the center lines. Numerals that indicate the amounts of money are written in the portions such that the numerals ascent in the order of the first portion 60a, second portion 60b and third portion 60c. After the third portion 60c, the next numeral is
15 written in the first portion 60a. With this arrangement, large numeric characters can be written in the portions so that the numerals can easily be seen to improve workability.

In summary, the present invention can remarkably
20 improve efficiency of counting work of coins in the field of coin handling businesses where coins are taken out of cash registers and counted according to their kind.



CLAIMS

1. A coin counter comprising
 - (a) a member having at least one longitudinal recess
5 for receiving a stack of coins of a certain kind;
 - (b) a plurality of transverse graduations which are longitudinally offset by the thickness of one coin; and,
 - (c) a number indicating portion formed just above
10 each graduation for indicating a total value of coins stacked in the recess up to that graduation, the number indicating portions being formed in longitudinal rows with the number indicating portions of adjacent graduations being in different rows.
- 15 2. A coin counter comprising
 - (a) a member having at least one longitudinal recess for receiving a stack of coins of a certain kind;
 - (b) a plurality of longitudinal rows of transverse
20 graduations with the graduations on each row being longitudinally offset below the graduations in another row by the thickness of one coin; and
 - (c) a number indicating portion formed just above
25 each graduation for indicating a total value of coins stacked in the recess up to that graduation.
3. A coin counter according to claim 2, wherein the rows or each pair of the rows of the graduations are separated by a longitudinal line.
- 30 4. A coin counter according to claim 3, wherein there are two rows of the graduations staggered on each side of a longitudinal centre line.
- 35 5. A coin counter according to claim 3, wherein there are three rows of the graduations alongside two of the longitudinal lines.



6. A coin counter according to any one of the preceding claims, wherein the member comprises a base, and a plurality of the recesses formed in a top surface of the base for different kinds of coins.

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7. A coin counter according to claim 6, wherein the graduations and indicating portions are provided in the bottoms of the recesses.

10 8. A coin counter according to claim 6, wherein the graduations and indicating portions are provided on side faces of the recesses.

15 9. A coin counter according to any one of claims 1 to 5, wherein the member having the recess comprises one of two segments of an at least partly transparent cylindrical storage container, the segments being openable and closable around a pivot portion and having means for maintaining the container closed.

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10. A coin counter according to any one of the preceding claims, wherein a recess is formed above each graduation to receive a respective number.

25 11. A coin counter, substantially as described with reference to any one of the examples illustrated in Figs. 2 to 8 of the accompanying drawings.