June 6, 1967 H. B. NIELSEN 3,323,627

APPARATUS FOR SORTING COINS

Filed Feb. 23, 1966 2 Sheets-Sheet 1

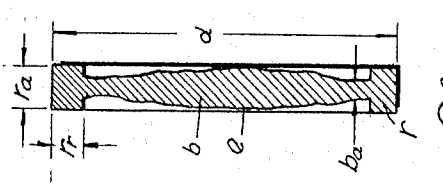

Fig. 1o

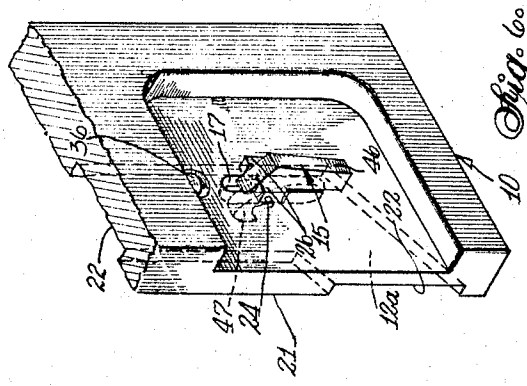

Fig. 6o

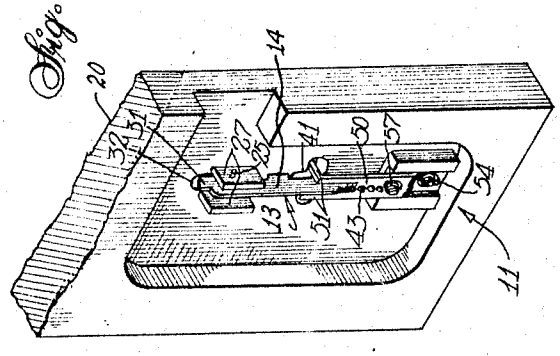

Fig. 7o

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June 6, 1967 H. B. NIELSEN 3,323,627

APPARATUS FOR SORTING COINS

Filed Feb. 23, 1966 2 Sheets-Sheet 2

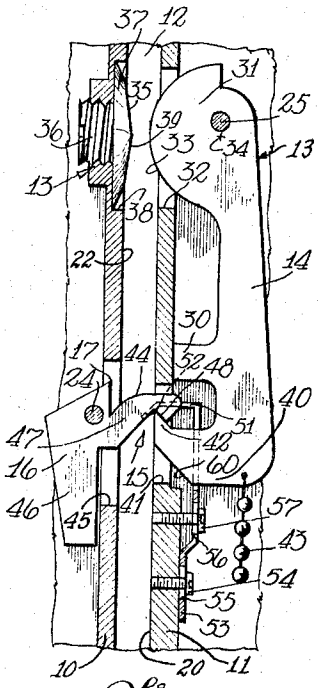

Fig. 2.

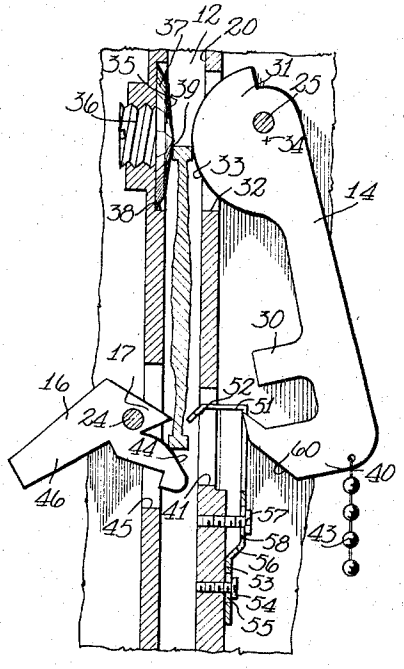

Fig. 3.

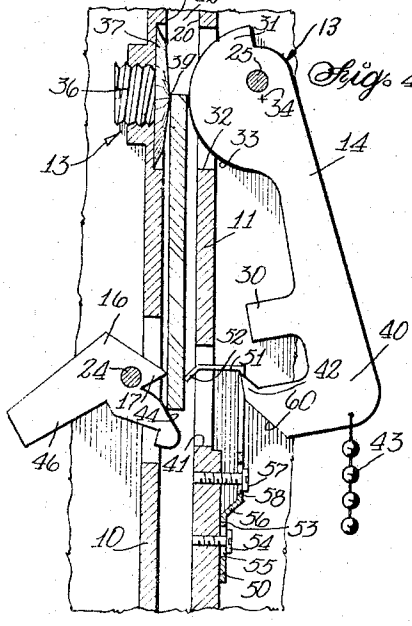

Fig. 4.

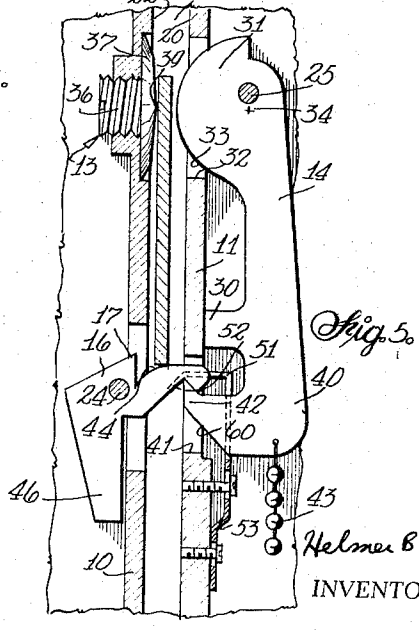

Fig. 5.

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United States Patent Office 3,323,627 Patented June 6, 1967

3,323,627

APPARATUS FOR SORTING COINS

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Filed Feb. 23, 1966, Ser. No. 529,315
Claims priority, application Canada, Feb. 11, 1966, 952,045, Patent 750,719
12 Claims. (Cl. 194—102)

ABSTRACT OF THE DISCLOSURE

An apparatus for testing coins for embossing characteristics with a pair of thickness checking elements, one of which engages the coin for testing body thickness immediately within the coin rim and the other of which engages the coin for testing the rim thickness. The body testing element is pivotally mounted and has a coin blocking portion which can move to a coin passing position only if the coin has a thin body thickness, and the rim testing element is interlocked to the blocking portion and releases it for movement only if the coin rim is thicker than the coin body.

This invention relates to a coin sorting device such as the type utilized in vending machines for detecting and rejecting slugs and other types of spurious coins.

There are available to the public many articles, such as washers, and circular metal blanks from stampings, hereinafter being termed spurious coins, which closely resemble authentic coins, and these continually present problems to operators and owners of machines for automatically vending goods and services. Such machines normally contain a sorting device for detecting spurious coins and rejecting such coins before they enter a switching means which commences a vend cycle and may even signal the machine to pay out change in authentic coins. There has been a trend for vending machine operators and the manufacturers of coin sorter devices to continue to modify and add new types of detecting means to the devices as different and refined spurious coins are detected in the machines. As a result of this trend some coin sorting devices have become very complex and include several precision parts. Not only are such coin sorting devices expensive to produce but they are difficult to keep in good working order.

Moreover, the problem of detecting spurious coins is continually becoming more difficult since as more and more vending machines are put into operation, it becomes more attractive for individuals to produce spurious coins for their own use or even for sale to others at a price considerably less than the value of the authentic coins which the spurious coins represent. For example, there are in wide circulation spurious coins carefully produced from sheet copper and simulating in general shape and characteristics Canadian and United States dimes and quarters. Even many of the more elaborate vending machine equipment presently in use cannot detect such counterfeit coins.

It is an object of the present invention to provide apparatus for efficiently detecting and rejecting spurious coins, and it is a further object to provide a coin sorting device of simple and inexpensive structure.

The present invention in effect involves a reading of embossing on the coin, and very accurate testing can be made by relatively simple mechanical means according to the device of the present invention, particularly if measurements are made on the two extreme axial thicknesses of an embossed coin which in all modern coins include the axial rim thickness and the axial body thickness immediately within the rim.

Thus, according to the device of the present invention wall members are provided to define a coin inlet passage for edgewise travel of coins in the device. In the passage, two gauging means are located to first test the thickness of each coin entering the passage adjacent the periphery of the coin and to secondly test the body thickness of the coin inwardly from the periphery. In association with the gauge means, there is provided blocking means in conjunction with the body thickness gauge and also controlled by an interlock means of the periphery thickness gauge, the blocking means being arranged to block passage to an outlet of the device for all coins having a tested thickness by the rim gauging means of less than one preselected magnitude and a tested thickness by the body gauging means of not less than another preselected magnitude.

In a specific embodiment of the invention, the body thickness gauge includes a pawl member mounted on a wall defining one side of the passage, the pawl member normally projecting into a coin obstructing position in the passage and being movable between said coin obstructing position and a coin passing position. A coin testing prominence is provided on the pawl member for testing the thickness of each coin at a point on the coin a distance inwardly from the periphery thereof slightly greater than the radial rim thickness of the coin and to prevent the pawl member from moving to the coin passing position for all coins having an axial body thickness greater than the axial body thickness of an authentic coin.

It is believed apparent from the above that unless the coin has a thickness immediately at the rim thereof of one magnitude corresponding substantially to the axial rim thickness of the authentic coin and a thickness within the rim of a magnitude considerably less than this rim thickness and substantially equal to the minimum body thickness of the authentic coin, it will not be accepted, and this, of course, rules out the acceptance of unembossed slugs or spurious articles which otherwise simulate the authentic coin nearly perfectly, that is in weight, thickness, diameter, electrical conductivity and bounce characteristics.

Reference is now made to the drawings which illustrate an embodiment of the present invention, by way of example, as follows:

FIGURE 1 is a cross-section through an acceptable coin which is shown to illustrate the embossing characteristics;

FIGURE 2 is a cross-sectional view through the coin passage of a preferred embodiment of the present invention showing the coin gauging means in the normal, unactivated position;

FIGURE 3 is a view similar to FIGURE 2, but with an authentic coin passing through said device;

FIGURE 4 is a view similar to FIGURE 2, but with a thick unembossed slug in the passage of the device;

FIGURE 5 is a view similar to FIGURE 2, but with a thin unembossed slug in the passage of the device;

FIGURE 6, which appears on the same sheet of drawings as FIGURE 1, is a perspective view of a portion of one wall member defining the coin passage and showing coin gauging means mounted thereon; and

FIGURE 7, which appears on the same sheet of drawings as FIGURE 1, is a perspective view of a portion of another wall member defining the coin passage and showing further parts of the coin gauging means mounted thereon.

Reference is first made to the coin shown in FIGURE 1 mainly for the purpose of making perfectly plain the terminology used herein in referring to the various di-

mensions of an embossed authentic coin. All authentic coins in each denomination are, of course, manufactured to have a predetermined outside diameter d, and are produced to very close tolerances. The body of the coin has an embossing e in the more central portion, and an embossed rim r having a predetermined radial thickness r_r and a predetermined axial thickness r_a runs about the periphery of the coin. In modern coins, the axial thickness of the rim of the coin, that is r_a, is greater than the thickness of the coin at any other point including the heavily embossed central portion e, and the least thick part of the coin is the axial body thickness b_a at the annular area immediately within the rim. Although coins in circulation do wear so that all dimensions become less than the very exacting dimensions maintained at the time of manufacture, the reduction in the axial rim thickness even with noticeable wear is only a matter of a few thousandths of an inch. Tests have revealed that only when coins approach an almost unidentifiable stage do the dimensions deviate seriously from the original, and of course, the government attempts to withdraw all noticeably deteriorated coins from circulation before they reach that stage.

Referring now to FIGURES 2, 6, and 7, for example, it may be seen that the sorting device of the present invention includes two wall members **10** and **11** defining therebetween a coin passage **12** for edgewise travel of one coin at a time therethrough. A rim gauging means **13**, including a lever **14** attached to wall member **11**, and a coin body gauging means **15**, including a pawl **16** attached to wall member **10**, are located along passage **12**. As will be described in more detail below, lever **14** and pawl **16** interlock to provide means for blocking passage of each coin which does not have a tested thickness at the periphery substantially equal to axial rim thickness r_a of an authentic coin. Also as will be described in more detail below, pawl **16** is provided with means, including prominence **17**, for testing the axial thickness of each coin inward from the periphery a distance slightly greater than r_r and for blocking passage of the tested coin if the measured thickness exceeds the dimensions b_a of an authentic coin.

As shown in FIGURES 6 and 7, wall member **11** may have a perfectly flat surface **20** defining one side of passage **12**, the passage actually being recessed into wall member **10** as shown in FIGURE 6. Thus, when the two walls are together, which is the normal condition surface **20** of wall member **11** abuts flatly against flat surface **21** of wall member **10**, and the passage **12**, which need be only slightly thicker across than the axial rim thickness of an authentic coin, is defined on opposite sides by surface **20** and recessed surface **22**.

The upper or inlet portion of passage **12** may be in direct communication with an inlet opening in the vending machine, and the inlet opening may be only large enough to permit insertion of coins having a diameter no greater than diameter d of an authentic coin. On the other hand, the sorting device may include several passages, like passage **12**, i.e., one for coins of a plurality of denominations, such as quarters, dimes and nickels, and this type of machine would preferably include a means for separating the coins into denominations, by diameter; such a separating means, which permits coins of all denominations to be inserted into one opening, being shown in my United States Patent No. 3,241,645, issued Mar. 22, 1966.

The coins passing down the upper part of passage **12** encounter the gauging means **13** and **15**, and if acceptable, they automatically pass the gauging means and enter an outlet portion **12***a* of the passage (FIGURE 6). The outlet portion **12***a* extends obliquely from under the gauge means so that each accepted coin is directed to one side of the device. The wall members **10** and **11** are separable by means not shown so that each spurious coin blocked in the device can be readily cleared. The wall members are preferably hinged at the top or along one side, and means extending to the outside of the vending machine are provided to swing the wall members to a separated position when a reject button is pushed. This type of an arrangement is shown in my abovementioned patent and need not be further expanded here. As the wall members swing apart, the blocked coin is free to fall straight down and into a reject chute of the vending machine.

Dealing now more specifically with the structure of the gauging means **13** and **15** of the preferred embodiment shown in the figures of drawings, it will be noted that pawl **16** and lever **14** are pivotally connected to wall members **10** and **11**, respectively, by pivot pin **24** passing through the pawl **16** and lugs **26**, **26** and by pivot pin **25** passing through lever **14** and lugs **27**, **27**, the lugs **26**, **26** and lugs **27**, **27** being formed on wall members **10** and **11**, respectively (see FIGURES 6 and 7). The pins **24** and **25** are horizontal and substantially parallel to side surfaces **20** and **22** and thus provide parallel axis about which pawl **16** and lever **14** are free to pivot. Pawl **16** and lever **14** are aligned on a common plane which extends substantially through the vertical center line of passage **12**.

Lever **14** hangs freely down from pin **25** in a normal unactivated position with a lug **30**, which is formed on the inner edge thereof, in light engagement with the outside of wall member **11**. A rim engaging prominence **31** is formed near the upper end of the lever **14** and projects into the passage **12** through an upper opening **32** in wall member **11**. The prominence **31** thus protrudes into the passage **12** and presents a camming surface **33** in the passage **12**, the camming surface preferably being of an arcuate form which is struck about a centre **34** located just below pivot pin **25**. Although the camming surface may be spaced from surface **22** of wall member **10** a distance slightly less than rim thickness r_a of an authentic coin, it is preferable to provide a slight protuberance **35** to permit more accurate gauging. The protuberance **35** is formed by a screw member **36** threaded into an opening in wall member **10** exactly opposite cam surface **33**. The screw member **36** has a domed head **37**, the apex **39** of which is aligned with lever **14** and is on the same level as centre **34** of arcuate cam surface **33**. The domed head **37** is partly received in a recess **38** in side surface **22** of wall member **10** but projects slightly into passage **12**. The threaded portion of screw member **36** has a slotted outer end so that it may be readily turned from outside of the sorting device whereby the spacing between the apex of the domed head **37** and camming surface **33** may be finely set by advancing the domed head **37** towards the lever **14** or backing it off. The proper setting is the position in which the spacing of the apex from the camming surface is slightly less than the rim thickness r_a for a reason which will become more readily apparent below.

At the lower end of the lever **14** there is formed an inturned portion **40** which projects into a lower opening **41** in wall member **11**. The portion **40** terminates with an upturned wedge shaped, pawl locking, projection **42**. Hanging from lever **14** is a length of chain **43**, such as a ball type chain, for damping vibration of the lever as an embossed coin passes camming surface **33**.

The operation and construction of the body gauging means **15** in its testing of the axial body thickness of a coin is similar to the pawl arrangement shown and described in my above-identified patent. The pawl **16** has a coin engaging ledge **44** which extends through an opening **45** in wall member **10** across from opening **41** in wall member **11**. The pawl **16** is biased to the normal position shown in FIGURE 2 by a weighted tail portion **46**, the tail portion normally hanging below pin **24** adjacent the outside of wall member **10**. In this normal position, the ledge **44** extends across passage **12** in a coin blocking position. The ledge **44** is formed by a projecting portion **47** of pawl **16**. The tail portion **46** is sufficiently weighted to permit the pawl to pivot to a coin passing position only

when a coin weighing substantially the amount as an authentic coin lands on ledge 44. The projecting portion 47 has an inverted V-shaped recess 48 in the bottom thereof normally receiving the projection 42 on inturned portion 40 which extends under projecting portion 47 of pawl 16. Unless lever 14 is activated to swing the inturned portion out from under projecting portion 47, as will be described further below, the pawl cannot pivot to a coin passing position in which ledge 44 retracts from passage 12.

Mounted below opening 41 on wall member 11 is a thin strip 50 of spring material, such as spring steel. The strip 50 has a bifurcated upper portion forming two fingers 51, 51 which extend through opening 41 and into passage 12. The fingers 51, 51 which straddle lever 14 (FIGURE 7), thus provide a pair of closely spaced coin testing projections 52, 52 in the passage extending out from side surface 20 of wall member 11 on the same horizontal plane as the pivot axis of the pawl provided by pivot pin 24. The strip 50 has a lower portion 53 which is held flatly against the outside of wall member 11 by a headed screw 54 passing through an opening 55 in the lower portion and threaded into the wall member. Between the lower portion 53 and fingers 52, 52, the strip 50 has a middle portion 56, which is offset from lower portion 53 so that it is spaced from wall member 11. The middle portion 56 also has an opening 58 through which a headed screw 57 passes. The screw 57 is also threaded into wall member 11 so that as it is turned in a direction to thread it into the wall member the middle portion 56 is forced by the head of the screw 57 towards the wall member, and this operation thus pushes the projections closer to the axis of the pawl 16. Moreover, the openings 55 and 58 are preferably aligned vertical slots so that the level of the projections 52, 52 may be adjusted by loosening both of screws 54 and 57. The strip can then be easily adjusted to the exact level for the projections before retightening the screws.

As indicated above, the passage 12 might be only one of several similar passages in a sorting apparatus, or the device might be designed to handle only coins of one denomination. In any event, it is apparent that each passage would be set up to handle coins of one denomination. Also as stipulated above, the screw member 36 is adjusted until the distance between the camming surface 33 and the apex 39 of the domed head is slightly less than the axial rim thickness r_a of the authentic coin for the passage. The distance must be a few thousandths of an inch less than r_a so that as the rim of an authentic coin moves between apex 39 and the arcuate cam surface, the lever is forced back from the wall member 11 by the weight and momentum of the coin against the camming surface. This difference between the spacing and the rim thickness is dictated, of course, by the spacing of the centre 34 below the pin 25 as it is the slight eccentricity of camming surface 33 that causes the swinging of lever 14 and permits the coin to pass between the camming surface and domed head 37. The adjustment of screw member 36 also has to take into account the fact the rim of some authentic coins are worn and the device must be set up to accept coins with at least noticeable wear. In a passage of a test model, designed for Canadian quarters, for example, experiments have shown that a setting of about .058" is desirable, the axial rim thickness of a new Canadian quarter being .065". In the same model a setting of .062" for the distance between the apex 39 and camming surface 33, was found proper for United States quarters, which when new have an axial rim thickness of about .070".

Taking the example of a device according to the present invention designed to accept authentic Canadian quarters, and first taking the case where an authentic coin is inserted in the machine, it will be appreciated that as the coin descends through the upper inlet passage containing the gauging means 13 and 15 described above, the lever 14 and pawl 16 are in the unactivated positions shown in FIGURE 2. As the rim at the forward advancing edge of the quarter enters into the space between the camming surface 33, and domed head 37, the lever is pivoted out from wall member 11 since the axial rim thickness r_a of the quarter is greater than the setting of .058". For a new quarter, the prominence 35 is actually forced therefore back about .065" less .058" or .007" so that the rim at the forward edge can pass. This movement is greatly magnified, of course, at the lower end of the lever 14. The movement of the lever 14 thus moves the inturned portion 40 from under the projecting portion 47 of pawl 16. Since recess 48 is V-shaped and upturned projection 42 is wedge-shaped, projecting portion 47 is cammed slightly upward to permit projection 42 to leave the recess 48, but the outward movement of the lower end of the lever is not impeded by this action.

As the authentic quarter continues to descend, the camming surface 33 rides over the embossing which causes the lever to flutter between the positions of the lever shown in FIGURES 2 and 3. Erratic vibration of the lever is dampened, however, by the length of chain 43. As previously stated, the camming surface 33 is located above the ledge 44 a distance substantially equal to the diameter of the authentic coin so that as the forward advancing edge of the quarter approaches the ledge 44 of the pawl 16 the lower end of the lever is moved back from the pawl to thereby leave it in an unlocked condition due to the rim at the trailing edge of the quarter moving between camming surface 33 and the apex 39 of the domed head 37 (see FIGURE 3).

Thus, under the weight of the authentic quarter, the pawl 16 commences to pivot from the position shown in FIGURE 2, through the position shown in FIGURE 3, and on to a coin passing position wherein the projecting portion 47 is retracted into the opening 45 below pivot pin 24. As the pawl 16 pivots to the coin passing position, the coin is subjected to a test of its thickness at its thinnest thickness, i.e., immediately within the rim. This test is carried out by pointed prominence 17 and the pair of projections 52, 52. The point of the prominence is above, or after the ledge 44 in the direction of pivot of the pawl towards the coin passing position, a distance slightly greater than the radial rim thickness r_r of the authentic coin so that the prominence does not engage the rim of an authentic coin. Screw 57 is tightened until the projections 52, 52 are spaced across the passage from the arc struck by the point of prominence 17 as the pawl pivots a distance slightly greater than the axial body thickness b_a of the authentic coin. In view of the fact that when the projections are set, the outer pointed end of prominence 17 is radially spaced from the axial of the pawl a distance slightly less than the spacing between the axis of the pawl and the projections 52, 52 minus the axial body thickness b_a, the pointed end of the prominence does not bind with the quarter as the pointed end passes the projections in the position shown in FIGURE 3. In the example of a Canadian quarter having an axial body thickness inside the rim of .051", the distance between the projections and the pointed end of the prominence as it passes the projections, would preferably be about .053".

Once the prominence passes through the horizontal plane including the axis of pivot and the projections 52, 52, the pawl is free to pivot on to its coin passing position under the weight of the coin, and the coin is free to slide past the pawl. After the rear edge of the descending coin passes the camming surface 33, the lever 14 is free to swing back towards its unactivated position but does not interfere with the passage of the authentic coin which is by this time passing the pawl 16. Once the coin has passed the pawl 16, it returns to its original position under the biasing effect of the weighted tail 16. In the event the inturned end portion 40 has commenced to enter above projecting portion 47, it is slightly cammed back as the projecting portion 47 engages a slanted lower

edge 60 of the inturned end portion 40 so that the pawl 16 can return to its position shown in FIGURE 2, in which the inturned portion 40 returns to its locking position under projecting portion 47 with projection 42 in recess 48.

Continuing with the example of the device set up to accept authentic Canadian quarters, a slug of substantially the same diameter as a quarter and having a thickness throughout the same as the axial rim thickness as the quarter, i.e., about .065" would move the lever 14 back to the position shown in FIGURE 4 as the forward edge moves between apex 39 and camming surface 33. The lever 14 would remain substantially in this position and leave the pawl 16 unlocked even until the slug engages the ledge 44. Any slug having a thickness a little greater than the setting between apex 39 and camming surface 33, namely .058", provided it has sufficient weight to move lever 14, could accomplish the unlocking of the pawl 16 since any such slug would, in fact, pass the rim test. However, as the pawl commences to pivot under the weight of the slug, the slug becomes jammed between the prominence 17 and the projections 52, 52 as shown in FIGURE 4. This jamming takes place in view of the fact that the pointed end of the prominence 17 is radially spaced from the axis of the pawl a distance greater than the spacing between the axis of the pawl and the projections 52, 52 minus the axial rim thickness of the authentic coin, and as indicated above, the slug must be substantially equal to or greater than the axial rim thickness to move the lever 14 to an unlocking position. In the example being used, it has been indicated that a setting of .053" clearance for the prominence of the pawl is sufficient, and yet the slug must be somewhat thicker than .058" to swing the lever 15 out. Accordingly, all thicker slugs become jammed as shown in FIGURE 4, and are thereby prevented from travelling on into an acceptable coin chute. The jammed slug may be cleared by separating wall members 10 and 11, in the manner previously discussed, so that it falls into a coin reject chute.

If a slug having a thickness throughout equal to or less than the body thickness b_a is inserted into the device, it does not activate lever 14, and therefore, although it can reach ledge 44, the pawl 16 remains locked as shown in FIGURE 5. The pawl remains locked because the thickness of the slug is less than the spacing between apex 39 and camming surface 33 so that its existence in the passage does nothing to unlock the pawl. Without the inturned end portion 40 of lever 14 under projecting portion 47, the pawl would pass the thin slug as it would not jam between prominence 17 and projections 52, 52. However, the weight of the thin slug on the ledge 44 only brings the projecting portion 47 down tightly on inturned portion 40, and projection 42 in recess 48 insures that the lever 14 cannot move to an unlocked position. In the above used example of the device, set up for a Canadian quarter, it is apparent that unless the slug is something less than .053" in thickness, it cannot pass the pawl test, and as already indicated, it would have to have a thickness of somewhat greater than .058" before the lever 14 will be moved to unlock the pawl. Thus, for the thin slugs, the ledge 44 remains in a coin blocking position, and the slug may only be cleared by separating the walls so that the inturned portion 40 and pawl 14 are pulled apart by the separating walls to permit the slug to fall directly down between the separated wall members and into the reject chute below the device (not shown).

Thus, it can be appreciated from the above description that the gauge means 13 and 15 actually check each coin for embossing, and rejects all spurious coins which do not have a rim substantially as great in thickness as the axial rim thickness of an authentic coin and which do not have a body thickness within the rim nearly as thin as the axial body thickness of an authentic coin. As previously mentioned, the tail portion 46 of pawl 16 is weighted to an extent that the pawl will not pivot unless the coin resting on the ledge 44 weighs nearly the amount of an authentic coin. Thus, any spurious coins made of any light material such as cardboard or plastic, which may be easily embossed, are not capable of tilting the pawl to a coin passing position. Similarly, an annular ring which has an axial thickness great enough to move the lever 14 to an unlocking position and is thin enough radially to locate between the ledge 44 and prominence 17 would not have sufficient weight to pivot the pawl because of its large central hole.

Because a pair of projections 52, 52 are provided, and these projections are horizontally spaced, a small distance on either side of pawl 17, the prominence 17 in conjunction with projections 52, 52, actually make a thickness test along a short chord within the rim. This is desirable as it greatly reduces the possibility of the device accepting a slug having the thickness of the rim of the authentic coin, but having any deformations or small holes adjacent the periphery thereof.

If the device of the present invention is used in a machine adapted to accept only coins of one denomination and the machine is provided with a coin inlet of a size which will not permit entry of coins of a larger diameter than that of the authentic coin, the device of the present invention is capable on its own of rejection of any coins of smaller diameter even if such coins have an embossed rim similar to that of an authentic coin. As a smaller coin passes camming surface 33, the lever is permitted to return to its locking position as the coin approaches the ledge 44 since the spacing between the ledge 44 and apex 39 is, as previously described, substantially equal to the diameter of the authentic coin.

Other gauging means could be used to conduct the two thickness tests, such as the feelers, electromagnetic switches, and diverting means which are described in my above-identified United States Patent, without departing from the spirit of the present invention. However, in view of the fact sufficient precision of measurement can be made with the preferred embodiment described above, the described mechanical arrangement is believed desirable because of its simplicity of structure, and moreover, this embodiment may be used in installations where no electrical supply is available.

The device of this invention has the advantage that it may be readily adjusted in the field as it only involves turning screw member 36 to set up the rim test and the turning of screw 57 to set up the coin body test. It may be further appreciated that because of the manner in which the machine may be adjusted, none of the four major parts of the device, namely, lever 14, pawl 16, screw member 36 and projecting forming strip 50, need to be precision made. Once the parts have been assembled, the gauging means 13 and 15 may be readily set up, for example, by first properly locating the height of projections 52, 52, before tightening screw 54 and then tightening in screw member 36 and screw 57 until the machine accepts new authentic coin and rejects a preselected coin having a considerable amount of wear. As discussed above, for a Canadian quarter the best settings for gauge means 13 and gauge means 15 appear to be approximately .058" and .053", respectively. For a device set up for a United States quarter the corresponding best setting appears to be approximately 0.62 and .058".

It is apparent that modifications obvious to those skilled in the art may be made to the preferred embodiment described without departing from the spirit of the invention defined in the appending claims.

I claim:

1. A coin sorting device for separating spurious coins from authentic rimmed coins, said device comprising wall means defining a coin passage for edgewise travel of coins in said device, a rim gauging means in said passage for testing the thickness of a coin entering said passage adjacent the periphery of the coin, a coin body gauging means for testing the thickness of the coin inwardly from the

periphery of the coin, the body gauging means being pivotably connected to said wall means and forming blocking means movable towards a coin passing position under the weight of the coin in response only to each coin having a tested body thickness less than one preselected magnitude, said rim gauging means having an interlock means for holding said body gauging means in a blocking position for each coin having a tested rim thickness less than another preselected magnitude.

2. A coin sorting device for separating spurious coins from authentic rimmed coins of a specific denomination having a predetermined radial rim thickness, a predetermined axial rim thickness and a lesser axial body thickness within the rim, said device comprising a pair of wall members having opposed spaced side surfaces defining therebetween a passage for edgewise travel of coins therethrough, a pawl member mounted on one of said wall members and normally projecting into a coin obstructing position in said passage, said pawl member being movable between said coin obstructing position and a coin passing position, a coin testing prominence on said pawl member arranged to test the thickness of each coin entering said passage at a point on the coin a distance inwardly from the periphery thereof greater than said predetermined radial rim thickness and to prevent said pawl member from moving to said coin passing position for all tested coins having an axial body thickness greater than said predetermined axial body thickness, and gauge means mounted on one of said pair of wall members and arranged to test the axial thickness of each coin entering said passage immediately at the periphery of said each coin, said gauge means being arranged to move from a coin blocking position in response to each test on coins having a rim thickness at least as great as said predetermined axial rim thickness.

3. A coin sorting device for separating spurious coins from authentic rimmed coins of a specific denomination having a predetermined radial rim thickness, a predetermined axial rim thickness and a lesser axial body thickness immediately within the rim, said device comprising a pair of wall members having opposed, substantially parallel, spaced side surfaces defining therebetween a passage for edgewise descent of coins therethrough, a pawl mounted on one of said wall members for pivotal movement about a horizontal axis outside of and parallel to said side surface of said one wall, said pawl having a coin blocking ledge normally extending through an opening in said one wall and into said passage, said pawl being arranged to swing from a coin blocking position towards a coin passing position on descent of a coin into engagement with said ledge, a projection on the other of said wall members across said passage from the pivot axis of said pawl, a coin gauging prominence on said pawl above said ledge and arranged to swing past said projection at a distance therefrom considerably less than said axial rim thickness and slightly greater than said axial body thickness as said pawl swings towards said coin passing position under the weight of a coin on said ledge, whereby the pivoting of said pawl to the coin passing position is prevented by engagement of said prominence with a coin having an axial body thickness greater than said distance, and a rim gauge for measuring the axial thickness immediately adjacent the periphery of each coin descending to said ledge, said gauge means in a normal unactivated position being interlocked with pawl for preventing movement of said pawl to said coin passing position, said gauge means being arranged to release said pawl in response to travel in said passage of a coin having a thickness adjacent the periphery thereof at least as great as said axial rim thickness.

4. A device as defined in claim 3, wherein said gauge means comprises a normally vertically hanging lever pivotally carried on said other wall member on a pivot axis above and substantially parallel to said axis of said pawl, said lever having a rim engaging prominence projecting into said passage above said pawl member, said prominence on the lever being normally spaced from said one wall a distance less than said axial rim thickness and greater than said axial body thickness, said lever having a catch on the lower end thereof and being movable from the normal inactivated position with said catch holding said pawl against movement to a pawl releasing position as a coin with an axial thickness at the periphery thereof at least equal to said axial rim thickness descends between said prominence on the lever and said one wall member.

5. A coin sorting device for separating spurious coins from authentic rimmed coins of a specific denomination having a predetermined diameter, a predetermined axial rim thickness and a lesser axial body thickness immediately within the rim, and a predetermined radial rim thickness, said device comprising a pair of separable wall members normally spaced to define between opposed, parallel surfaces thereof a passage for edgewise descent of coins therethrough, a pawl mounted on one of said wall members outside of said passage for pivoting about a horizontal axis parallel to the side surfaces of said wall members, said pawl being mounted outside of said passage having a coin engaging ledge projecting through an opening in said one wall member, said pawl being biased to a normal position wherein said ledge is in the direct path of coin descent and blocks travel through said passage but being pivotable under weight of each coin on said ledge towards a coin passing position wherein said ledge is retracted from said passage, a lever aligned with said pawl and pivotally connected to said other wall outside of said passage on an axis parallel to the axis of said pawl, said lever having an inturned lower end portion extending through a lower opening in said other wall opposite said pawl, said end portion of said lever normally extending into said passage under said ledge to thereby prevent pivot of said ledge from pivoting to the coin passing position, said lever having a camming surface immediately below the axis of pivot of said lever, said camming surface protruding through an upper opening in said other wall member and into said passage above said ledge of the pawl in the normal position a distance substantially equal to said predetermined diameter, a protuberance on said one wall member opposite the camming surface on said lever and spaced across said passage a distance slightly less than said axial rim thickness whereby the rim having a thickness equal to said predetermined axial rim thickness on a coin descending to said ledge cams said lever away from said passage and the lower end portion of said lever swings from under said ledge to thereby permit pivoting of said pawl, a pair of projections extending into said passage from said other wall opposite said pawl, said projections being one on either side of said lever and being on the same horizontal plane as the axis of the pawl, and a prominence formed on said pawl after said ledge in the direction of pivot of said pawl towards said coin passing position a distance slightly greater than said predetermined radial rim thickness, the outer end of said prominence having an outer end radially spaced from the axis of the pawl a distance greater than the spacing between the axis of the pawl and said projections minus said predetermined axial rim thickness and a distance slightly less than the spacing between the axis of the pawl and said projections minus said predetermined axial body thickness whereby pivoting of said pawl to the coin passing position is prevented by engagement of said prominence with coins having an axial body thickness approaching said predetermined axial rim thickness.

6. A device as defined in claim 5, wherein the camming surface on said lever has an outline defined by an arc of a circle struck about a centre below said axis of the lever a short distance relative to the distance between said camming surface and ledge.

7. A device as defined in claim 6, wherein said protuberance on said one wall member consists of a screw member threaded into an opening in said one wall member and having a domed head the apex of which is aligned with said lever on the same level as said centre of the arcuate camming surface, said domed head being adjustable towards and away from said camming surface.

8. A device as defined in claim 5, wherein said ledge is formed by a projecting portion of said pawl, said projecting portion having an inverted V-shaped recess in the bottom thereof, and wherein said inturned lower end portion of said lever terminates in an upturned wedge-shaped projection normally received in said recess in the projecting portion of the pawl.

9. A device as defined in claim 5, wherein a short length of chain is suspended from said lever for damping vibration of said lever.

10. A device as defined in claim 5, wherein said pawl is biased to said normal position by a weighted tail portion, said tail portion having sufficient weight to prevent pivoting of said pawl to said coin passing position in response to a weight on said ledge substantially less than said authentic coin of the specific denomination.

11. A device as defined in claim 5, wherein said pair of projections is formed by a thin strip of spring material attached to said other wall member outside of said passage, said strip including a bifurcated upper portion bent over to form two fingers projecting into said passage on

opposite sides of said lever, a lower portion attached flatly against said other wall member, and a middle portion offset from the lower portion to provide a portion between said upper portion and lower portion spaced outwardly from said other wall member, said middle portion having an opening therethrough, and further comprising a headed screw passing through said opening in said middle portion and being threaded into said other wall member, whereby the projection of said fingers into said passage may be adjusted by adjustment of said screw.

12. A device as defined in claim 11, wherein said lower portion of said strip is attached to said other wall member by another headed screw passing through an opening in said lower portion and threaded into said other wall member, said openings in said lower portion and said middle portion being aligned vertical slots, whereby the vertical position of said pair of projections can be adjusted by shifting said strip after loosening said screws.

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