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METHOD AND APPARATUS FOR EXAMINING AND IDENTIFYING BANK NOTES OR THE LIKE, PREFERABLY USED IN CONJUNCTION WITH VENDING MACHINES

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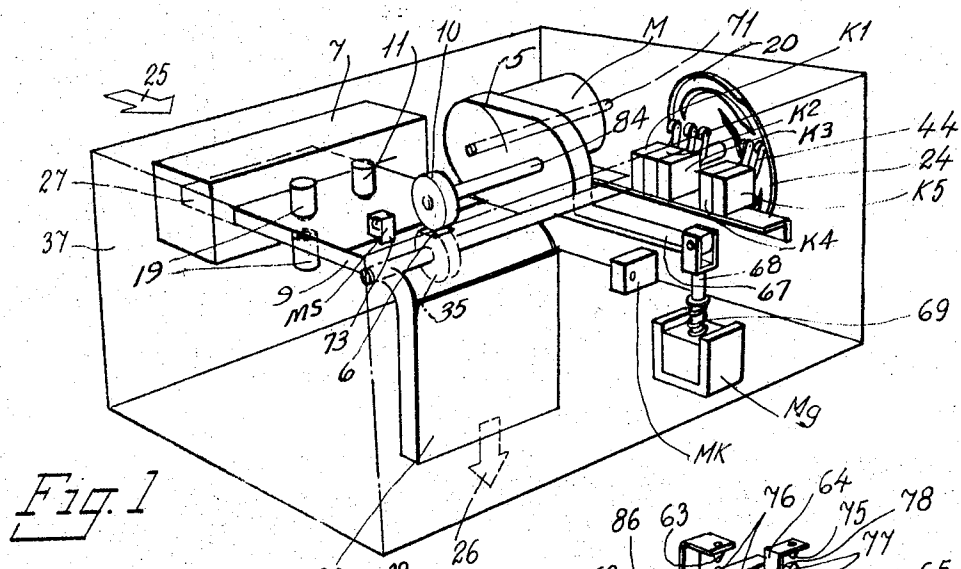

Fig. 1

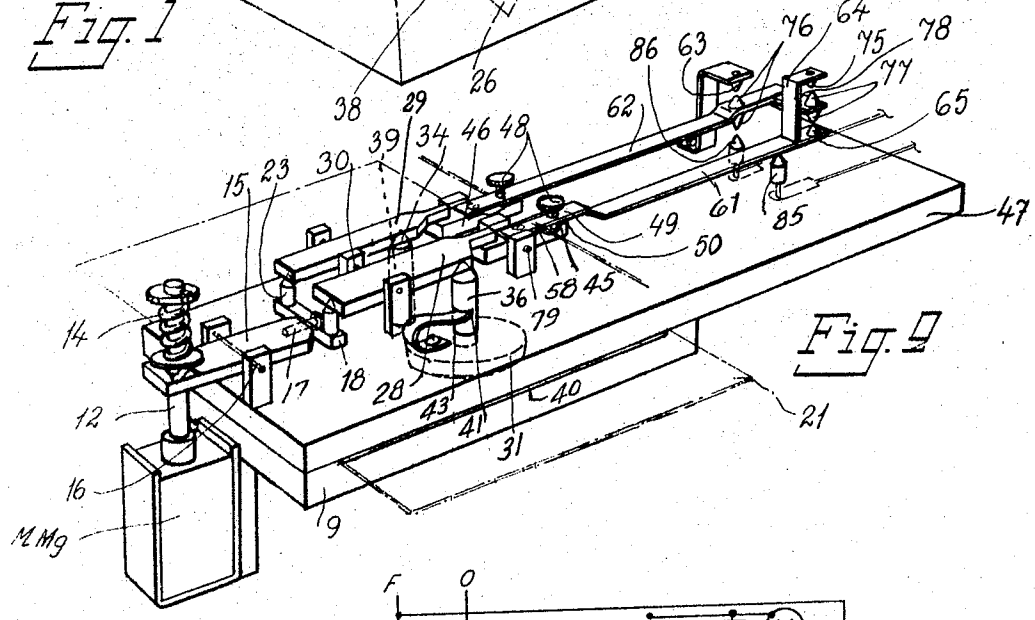

Fig. 2

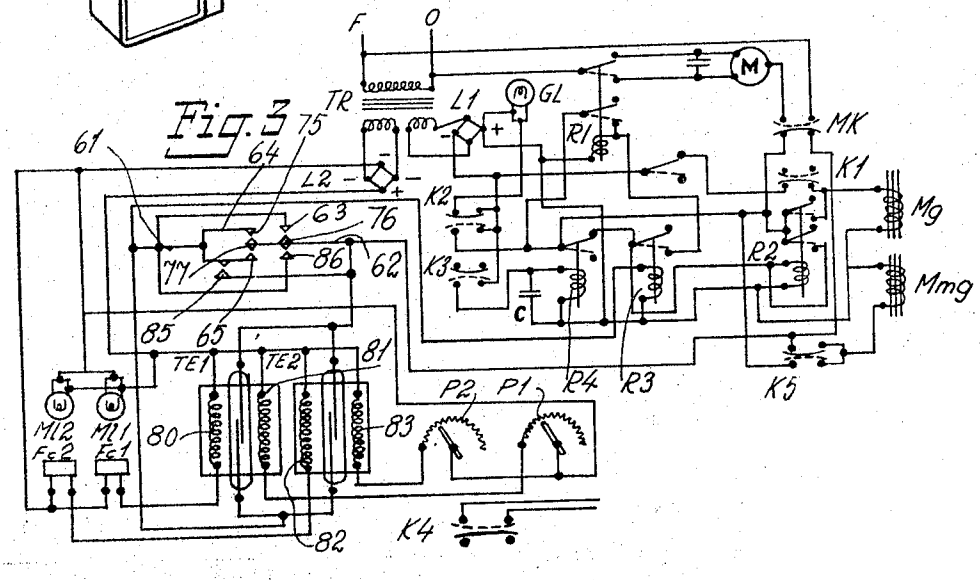

Fig. 3

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METHOD AND APPARATUS FOR EXAMINING AND IDENTIFYING BANK NOTES OR THE LIKE, PREFERABLY USED IN CONJUNCTION WITH VENDING MACHINES

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ABSTRACT OF THE DISCLOSURE

The disclosure involves a method for checking bank notes or the like in a checking station which includes the step of gauging mechanical dimensions at at least one distinguishing area of the bank note. The gauged values obtained are compared with standard signals and a comparison signal produced which is then utilized to distinguish between genuine bank notes and forged or damaged bank notes. The disclosure also involves an apparatus for checking bank notes or the like and for passing genuine notes to an item dispensing device. The apparatus includes a gauging means for gauging mechanical dimensions at at least one distinguishing area of the bank note. A comparator means is used for comparing the gauged values with standard values so as to produce a comparison signal. Utilizing means are provided which are responsive to said comparison signal to differentiate between genuine and forged or damaged bank notes. Means are provided for passing the genuine notes to a collection station and for returning notes which are forged or damaged.

The present invention relates to a detecting device for examining and identifying bank notes or the like, preferably for use in combination with a vending machine which accepts banknotes.

Devices for separating genuine bank notes from forged ones are previously known in automatic machines of the aforementioned type. In practice, however, previously known detectors have shown to be encumbered with several deficiencies, the most serious of which is their unreliability in distinguishing between genuine bank notes and accurately made copies of such notes, for instance photo-copied bank notes.

Devices have been designed, for instance, which are provided with a plurality of photo-electric measuring stations, at which the ability of a bank note inserted in said devices to reflect light or permit light to pass through the same can be compared with the same characteristics of a genuine bank note or with certain standard values. It has been proved that the application of solely these means to identify bank notes etc. does not always give positive results, since the tolerance limits in photoelectrical apparatus utilized for this purpose must be set very close, in order to increase the reliability of the device to detect forged bank notes. Among other things a much too large number of genuine bank notes have been rejected, for instance such notes which are genuine but which are old and somewhat dirty and crumpled. The object of the present invention is to provide a detecting device of the aforementioned type, which is distinguished by its practically one hundred percent reliability with respect to differentiating between genuine and forged bank notes. Another object of the invention is to provide for a very large number of different possible combinations concerning the examined areas on the notes.

In accordance therewith the invention more particularly

relates to a method for checking bank notes or the like and for passing genuine notes to an apparatus for dispensing items, such as gasoline, change, etc., said method comprising the steps of placing a bank note in a checking station, gauging at least one distinguishing area of said bank note in said checking station, comparing the values obtained from the gauging operation with standard values, producing a comparison signal, and utilizing said comparison signal to differentiate between genuine and forged or damaged bank notes etc., and for passing genuine notes to a place of collection and returning forged or damaged notes.

It is possible by means of the method according to the invention to utilize a previously unused varying magnitude of bank notes, giving a high degree of reliability in the case of well used bank notes, as well as with forgeries in the form of photo-copies and the like, by means of which forgeries it is otherwise possible to escape detection in a purely photoelectric indicator. It is not only the thickness of the bank notes which is used, this being in itself known and which on its own does not provide a great degree of reliability, but that the difference in thickness between various determined measuring points on the bank notes are also gauged, i.e. the nature of the surface of the note at these points is indicated, and by means of this method it is thus also possible to distinguish polished photographic paper, which is a usual type of forged bank note.

The invention also relates to an apparatus for checking notes or the like and for passing genuine notes to a device for dispensing items, such as gasoline, change etc., said apparatus comprising a checking station, gauging means for gauging at least one distinguishing area of said bank note in said checking station, comparator means for comparing the values obtained from the gauging operation with standard values, signal producing means for producing a comparison signal, and means utilizing said comparison signal to differentiate between genuine and forged or damaged bank notes etc., and means for passing genuine notes to a collection station and returning forged or damaged notes.

Further characterizing features can be read from the following and said features are also defined in the accompanying claims.

The apparatus and method according to the invention will now be more closely described in connection with the accompanying drawings which illustrate a particular embodiment.

Thus, FIGURE 1 shows in perspective an apparatus according to the invention with a certain portion of the casing removed.

FIGURE 2 shows in perspective the comparison means in the apparatus according to FIGURE 1, at two gauging positions.

FIGURE 3 shows a simplified electric wiring diagram for the apparatus according to the invention.

The apparatus according to the invention, shown in perspective in FIGURE 1, is built in a casing **37**. The apparatus comprises a gauging table **9** provided at its rear end with an insertion slot **27** and at its front end with a feed out drum **38**. Bank notes or other types of promissory notes to be examined in the apparatus are fed in through said slot **27** in the direction of the arrow **25** and passed through the unit by means of a driving means which includes drive rollers. Genuine bank notes are fed out in the direction of arrow **26** by means of said drum **38**. The said driving means includes an upper driving roller **10** and a lower driving roller **35**. The shaft **84** of the roller **10** is driven by an electric motor M, via a gear unit **5**.

Each of the rollers **10** and **35** extend through the gaug-

ing table through a slot, the slot for roller **35** being visible in FIGURE 1 and indicated by the reference numeral **6**.

A gauging means **7**, mounted on the gauging table, is adapted to sense certain surface portions of the inserted notes, the said surface portions being those suitable for different bank notes. A magnetic changeover switch M*s* is arranged so that its sensng arm **73** lies within the path of movement of the bank note.

Further, mounted on the gauging table is a photoelectric measuring tube **11**, provided with a source of light and intended for measuring the amount of light reflected from the notes, and a second measuring tube **19** provided with an opposing source of light and located on the opposite side of the note for measuring the amount of light which passes through the notes.

The right hand portion of the casing **37** contains a contact disc **24** provided with contact curves **20**. The contact curves are adapted to cooperate with micro-switches K1–K5 associating with arms **44** acting as contact breakers. The contact disc **24** is provided with a shaft **70** driven by said roller **35**.

The motor M together with associating gear unit **5**, shaft **84** and driving roller **10** are secured to a lever **67**, at the one end of which is pivotally connected a connecting rod **68**, associating with a magent M*g* which when energized attempts to draw the rod **68** downwards against the action of a spring **69**. The lever **67** is vertically pivotally mounted at its other end on a shaft **71**, at the wall of the casing **37**.

A microswitch M*k* is adapted to cooperate with the lever **67**, as described below.

The gauging means **7** is shown in detail in FIGURE 2.

A gauging magnet M*mg* is secured to the gauging table and provided with a connecting rod **12** securely connected to the core of the magnet, and the free end of which is actuated by a coil spring **14** the lower end of said spring resting against the left end (as seen in the figure) of a lever **15**. Said lever **15** can be rotated at **16** and its right end (as seen in the figure) is provided with a pin **17** which passes through a hole in a second lever **18** arranged at right angles to the lever **15** and which thus can be pivoted around the pin **17** in a vertical plane, perpendicular to the vertical pivoting plane of the lever **15**. The lever **18** is provided with rounded upper portions **23** against which a lever **28** and **29** rest respectively at each end of the lever, the point of rotation of said levers **28** and **29** being indicated by the reference numeral **30**. The other arm of the lever **28** and **29** is actuated from underneath by a rod **36** and **39** of a plunger **31** and **34** respectively. The said rods pass through holes in a plate **47** of the gauging table and the plunger heads are adapted to rest, whilst the gauging sequence is carried out, on a bank note **21** inserted in the slot **40**. Each of the plungers are held raised by a spring **43**, the free end of which engages a groove **41** in the plunger. The right ends (as seen in the figure) of the levers **28**, **29** actuate respective levers **45**, **46**, which are pivotable at **79** and each of which supports a contact spring **61** and **62** respectively. The contact springs **61** and **62** are each secured to the respective levers by means of a screw **48** which is insulated from the spring by means of an insulating washer **49**. The springs are insulated from associating levers by means of insulating supports **50**. The screws **48** are intended for adjusting respective contact springs **61**, **62**. The plungers **31** and **34** are provided with contact surface areas of different magnitude, for example circular with an area relationship of 1:10 or rectangular measuring, for instance, 1.5 x 15 mm. and 10 x 15 mm. respectively (not shown) and, depending on the degree of uneveness of the paper note at specific gauging stations, the plunger of smaller area sinks further down into the surface pattern of the bank note at its respective gauging points. A gauged difference in the case of a genuine bank note, new as well as used, should lie between certain limits at these, suitably selected, gauging positions. The difference disclosed in the case of a smooth photographic paper is all too small and the tender will be refused even though the optical variables agree with those of a genuine bank note. A note which is too rough, such as possibly a forged note, also gives a negative reading. Naturally it is possible to reduce further the plunger areas, as well as also to change the shape of the contact surfaces, but in principle the smaller plunger is lowered down at the measuring stations, between the "crests" of the paper whilst the larger plunger rests on several "crests" and gives the larger dimension.

The free ends of the springs **61**, **62** are provided with a number of contacts, namely **65** and **75** on the spring **61** and **76** and **77** on the spring **62**. The double contact **76** cooperates with a stationary contact **63** and a stationary contact **86**, and the spring **61** cooperates with another stationary contact **85**. The double contact **77** is arranged on a perpendicularly bent end **78** of the spring **62** and cooperates with the contact **65** and second contact **75**, mounted on a forked portion **64** of the spring **61**. Naturally all contacts and arms are insulated from the base **47**.

The reference numerals R1–R4 in FIGURE 3, which shows diagrammatically the electrical means included in the apparatus according to the invention, indicate relays, TR a transformer for net supply, C a capacitor and GL an indicating lamp. Further, FIGURE 3 shows the motor M, the microswitches K1–K5 and M*k*, the magnetic changeover switch M*s*, the magnet M*g*, the gauging magnet M*mg* and the contacts **63**, **65**, **75**, **76**, **77**, **85** and **86**. Current is supplied from the terminals F–O via the transformer TR and via the rectifier bridge L1.

A brief explanation of the function of the apparatus according to the invention will be given below.

A bank note, the genuineness of which is to be ascertained or which is to constitute the means of payment for goods, is inserted into the insertion slot **27**, in the direction of arrow **25**, until the front edge of the bank note reaches the sensing arm **73**. As can be seen from FIGURE 3 the normally open connection M*s* is closed (to upper contact in FIGURE 3) so that current flows to the winding of the magnet M*g*. The connecting rod **68** is thus drawn (FIGURE 1) downwards, whereby the lever **67** is also swung downwards. The bank note is thus clamped fast between the rollers **10** and **35**. Driving current to the motor M is closed over the upper contacts on M*k*, controlled by M*g*, and the feed mechanism is set into motion.

The contact disc **24** is driven via the motor M and the rollers **10** and **35** by the shaft **70**. When the disc **24** begins to rotate, the microswitch K2 is switched over (to lower position) and the lamp GL is extinguished. The lamp shines when the apparatus is in a state of rest and thus indicates to a customer or operator that the apparatus is ready for use. The program mechanism is so programmed that when the object to be gauged is fed by the driving rollers into a gauging position suitable for the said object, the apparatus stops for the measuring process and restarts when the capacitor (C), which holds R4, is discharged and R4 falls (to the upper position). The microcontact K4 and the program mechanism is momentarily closed and broken immediately before the apparatus, subsequent to checking an accepted, gauged object, has returned to rest position. K4 then emits an impulse to the pertinent vending apparatus instructing it to deliver the goods paid for (not shown).

The microswitches K1 and K3 are actuated by the contact disc **24** and thus switch over when the bank note has reached the gauging position. The current to the magnet Mg is then broken over K1 (dotted position), the roller **10** being lifted out of engagement with the bank note and the roller **35**, which stops. M*k* returns to home position owing to the actuation of the lever **67** and the motor stops, disconnected by M*k*. M*k* thus connects up the gauging means and the gauging magnet M*mg*. M*mg* then adjusts the gauging means according to FIGURE 2 for gauging and the plungers **31**, **34** abut respective portions of the banknote. M*mg* is disconnected by means of a contact K5, controlled by the disc **24**. K3 has been switched

over and the current to the capacitor C and the relay winding R4 is broken. The capacitor C holds R4 withdrawn for a length of time, necessary to allow the gauging means to carry out the gauging function. The relay R4 falls with a certain time delay. R4 closes a contact and R2 is withdrawn, a current path thus passing to the magnet Mg via R2. The contact on R3 is closed if the banknote is false. If the bank note is genuine no current flows to the winding on R3, nor yet to the winding on R1. Relay R1 remains fallen and the motor M rotates forward when it is then connected up by Mk which is actuated by Mg. If the banknote is a forgery contact is made over one or more of the contacts in the measuring means (63, 65, 75, 76, 77, 85, 86). The R3-winding is then energized and R3 lies withdrawn so that current flows to the winding on R1 which is then withdrawn and locked. When the current in the capacitor C has ceased and R4 falls, an impulse to the winding on R2 is obtained and R2 is switched over and locked over its own contacts and passes current to Mg which is then withdrawn and Mk switches over, the motor M restarting in a direction determined by the fact as to whether the bank note is genuine or false, depending on the mutual position of the contacts of the measuring means. At the same time as R4 is disconnected the current over Mk to the magnet Mmg is broken and the difference-gauging means (FIGURE 2) returns to home position, the bank note being able to pass freely in either direction, depending on whether the said note is genuine or false.

The apparatus according to the invention examines the variations in height or thickness appearing on bank notes, and which in genuine notes reoccur from note to note, for instance, height differences caused by text, figure marks, water marks, stamps, and portraits etc.

As can be seen from FIGURE 2 it is necessary in order to show a difference in height to gauge at least two positions, which means that at least two plungers 31, 34, suitably of different contact area must be used.

The system for amplifying the differences in height has been shown as a system of levers but it is obvious that gear systems, wheel systems, screw systems or optical amplifying systems can also be used. By utilizing such an amplifying system it is possible to register the minutest variation in height (in the order of 0.5–2 hundreths of a millimeter), such as occurs in genuine bank notes, and amplify the same to magnitudes which can be registered practically.

The design or shape of the plungers 31, 34 is suitably selected so that, for instance, a plunger 34 provided with a small head or measuring plate is used when measuring bottom heights or the thickness of the paper of a bank note, while a plunger 31 having a gauging plate of larger area and of suitable surface configuration is used to measure the height of, for instance, an image, an emblem, text or face or other convenient protuberances on a bank note. Depending on the position of the plungers against the bank note the levers 28, 29 and thus the springs 61, 62, lie positioned so that either the contacts 76, 77 rest in neutral position (genuine bank note) or are in contact with a countercontact (63, 86, 65, 75).

The aforementioned apparatus also provides for indication of the correct or wrong thickness of a bank note, i.e. the position of a plunger is compared with a reference which is equal to the position of a stationary contact.

The invention according to the aforegoing may be combined, for instance, with a photoelectric gauging mechanism for gauging the light-permeability and light-reflexion-ability of the bank note. Similar apparatus have been designed for identifying bank notes used in vending machines and machines for giving coins in exchange for bank notes, i.e. for the same field of use as the aforementioned invention. The object of this last mentioned piece of equipment, which may serve as a valuable complement to the aforegoing apparatus, is also to return false or damaged bank notes and to pass genuine banknotes to a collecting station in the vending machine. Arranged in a special piece of similar photoelectric equipment, which may also be combined with the aforegoing apparatus, are at least two gauging means for gauging the ability of a note to reflect light and its permeability to light, along at least one line on the note and comparing means for comparing the gauged values with determined standard values.

It is also possible with the photoelectric indicating process to gauge bank notes, which are held stationary, as in the case of the dimension measuring process according to the aforegoing, and thereby firstly roughly sorting the notes and then finely sorting the same by gauging a certain dimension. The photoelectric gauging process should thus be carried out at wider tolerance limits.

A combination of this type gives a high degree of certainty in detecting false and damaged bank notes and, furthermore, greater flexibility concerning the use of the apparatus with various types of bank notes or the like.

The wiring scheme shown in FIGURE 3 includes, in addition to the components necessary for measuring thickness and difference in magnitude, also includes a simplified means for photoelectric gauging, comprising two measuring tubes M11, Fc1 and M12, Fc2, respectively, two tongue element relays TE1, TE2 having associated windings 80, 81 and 82, 83 respectively, and potentiometers P1, P2 and a rectifier bridge L2.

The function of the arrangement is as follows:

At least one measuring tube measures the light-permeability or/and light-reflexion on selected dark portions of the object to be measured (e.g. M11, Fc1) at least one tube measures, in the same way, selected light portions (e.g. M12, Fc2).

The current from L2 passes—through for instance the photocell Fc1—through the winding 80 of the tongue element TE1. At the same time the current passes from L2—via the potentiometer P1—to the winding 81 in TE1. The windings 80 and 81 are mutually counteracting. P1 is so adjusted that the windings, in the case of a genuine object, compensate each other, and consequently the contact of the tongue element T1 is broken. Corresponding adjustment occurs for TE2.

If the object to be measured is false or damaged, the current in the winding 80 or 82 increases or decreases in relation to the adjusted current through 81 and 83 respectively. The tongue element contacts are thus closed. If any of the tongue elements lie closed when R4 falls, R3 is withdrawn and passes current to the winding on R1, which is withdrawn and locked in the reverse position of the motor. The apparatus then operates in reverse and the bank note is returned through the insertion slot 27.

Since the gauging process by means of light in apparatus according to the invention is of a secondary significance and merely constitute a means supplementary to the measuring process of thickness and difference in magnitudes, it can be set at fairly wide limits, and consequently dirty and partly miscoloured copies of the object to be measured may also be accepted.

The invention can be modified in various ways with respect to the described embodiment without departing from the scope of the inventive idea, thus it is conceivable that the gauging of the thickness can be effected by means other than mechanical ones, such as free-blowing instruments, X-ray apparatus, laser rays, using said bank note as a capacity member in a electric circuit and by means of accoustic measurement etc.

What is claimed is:

1. A method for checking bank notes or the like and for delivering genuine notes to an apparatus for dispensing goods, such as gasoline, change, etc., said method comprising the steps of measuring optic characteristics of a bank note, producing a signal representing said measured optic characteristics, gauging height dimensions of

characteristic portions of said note, producing a second signal representing the difference between the measured values obtained at said portions, determining whether or not the magnitude of said signals lie within a pertinent predetermined range of values, and causing such notes which give a difference value lying outside the respective one of said ranges to be rejected and such notes which give difference values lying within said respective ranges to be accepted.

2. An apparatus for checking bank notes or the like and for delivering genuine notes to a device for dispensing goods, such as gasoline, change, etc., said apparatus comprising optical measuring means for measuring optic characteristics of a bank note, means for producing a signal representing said measured optic characteristics, means for gauging height dimensions of characteristic portions of said note, means for producing a second signal representing the difference between the measured values obtained at said portions, means for determining whether or not the magnitude of said signals lies within a pertinent predetermined range of values, and means for rejecting such notes which give a difference value lying outside the respective one of said range and accepting such notes which give difference values lying within said respective ranges.

3. An apparatus for checking bank notes or the like and for delivering genuine notes to a device for dipensing goods, such as gasoline, change, etc., said apparatus comprising a first plunger having a certain contact area arranged to rest upon one portion of a note, a second plunger having a considerably greater contact area arranged to rest upon another portion of said note, means for determining the difference between the height positions of said plungers and means for determining whether or not said difference lies within a predetermined range of values, and causing such notes which give a difference value lying outside said range to be rejected and such notes which give a difference value lying within said range to be accepted.

4. An apparatus as claimed in claim 3, comprising lever means for mechanically amplifying said height difference.

5. An apparatus as claimed in claim 3, wherein said means for determining whether or not said difference lies within said predetermined range comprise a limit switch mechanism for defining upper and lower limits for said range.

6. An apparatus for checking bank notes or the like and for delivering genuine notes to a device for dispersing goods, such as gasoline, change, etc., said apparatus comprising a measuring table, conveyor means to transfer a bank note to said measuring table, program control means, first lever means for activating said program control means and said conveyor means, sensing means for sensing the front edge of said notes and for actuating said first lever means when the position of said note is such that measuring is possible, a first plunger having a certain contact area arranged to rest upon one portion of a note located on the measuring table, a second plunger having a considerably greater contact area arranged to rest upon another portion of said note located on the measuring table, means for determining the difference between the height positions of said plungers, second lever means for mechanically amplifying said height difference, limit switch means for determining whether or not the said difference lies within a predetermined range, and means controlling said conveyor means to convey genuine notes to a collection means and to return forged or damaged money to the customer.

7. An apparatus as claimed in claim 6, wherein said program control means comprise a cam disc, cam operated micro switches arranged to be opened and closed by said disc in accordance with a predetermined measuring program, and electric circuit means cooperating with said switches and controlling the operation of said conveyor means, said lever means and said plungers.

8. A method for checking bank notes or the like and for delivering genuine notes to an apparatus for dispensing goods, such as gasoline, change, etc., said method comprising the steps of gauging characteristic portions of a bank note, producing a first signal representing the difference between gauged values obtained at said portions, determining whether or not the magnitude of said first signal lies within a first predetermined range of values, comparing one of said gauged values with a standard value and producing a second difference signal, determining whether or not the second signal lies within a second predetermined range of values, causing such notes which give a first difference value lying outside said first predetermined range of values to be rejected, and causing such notes which give a second difference value lying outside said second predetermined range of values to be rejected, whereby such notes which give a first difference value and a second difference value lying within said first and second ranges of values respectively are accepted.

9. A method for checking bank notes or the like and for delivering genuine notes to an apparatus for dispensing goods, such as gasoline, change, etc., said method comprising the steps of gauging characteristic portions of a bank note, producing a first signal representing the difference between gauged values obtained at said portions, determining whether or not the magnitude of said first signal lies within a first predetermined range of values, comparing one of said values representing the actual thickness of the note with a standard thickness value and producing a second difference signal representing the difference between said actual thickness of the note with a standard thickness value and producing a second difference signal representing the difference between said actual thickness and said standard thickness, determining whether or not the second signal lies within a second predetermined range of values, causing such notes which give a first difference value lying outside said first predetermined range of values to be rejected, and causing such notes which give a second difference value lying outside said second predetermined range of values to be rejected, whereby such notes which give a first difference value and a second difference value within said first and second ranges of values respectively and are of acceptable thickness are accepted.

10. A method for checking bank notes or the like and for delivering genuine notes to an apparatus for dispensing goods, such as gasoline, change, etc., said method comprising the steps of gauging height at characteristic portions of a bank note, producing a signal representing the height difference between gauged values obtained at said portions, determining whether or not the magnitude of said signal lies within a predetermined range of values, and causing such notes which give a difference value representative of differences in height characterstcs between said characteristic portions lying outside said range to be rejected and such notes which give a difference value representative of differences in height characteristics between said characteristic portions lying within said range to be accepted.

11. A method for checking bank notes or the like and for delivering genuine notes to an apparatus for dispensing goods, such as gasoline, change, etc., said method comprising the steps of gauging characteristic portions of a bank note, mechanically amplifying the difference of said gauged values, producing a first signal representing the difference between the gauged values obtained at said portions, determining whether or not the magnitude of said signal lies within a predetermined range of values, and causing such notes which give a difference value lying outside said predetermined range of values to be rejected and such notes which give a difference value lying within said predetermined range of values to be accepted.

12. An apparatus for checking bank notes or the like and for delivering genuine notes to a device for dispensing goods, such as gasoline, change, etc., said apparatus com-

prising a gauging means for gauging characteristic portions of a bank note, signal producing means for producing a first difference signal representing the difference between gauged values obtained at said portions, means for determining whether or not the magnitude of said first difference signal lies within a predetermined first range of values, means for comparing one of said gauged values with a standard value, means for producing a second difference signal representing the difference between said one of said gauged values and of said standard value, means for determining whether or not the magnitude of said second difference signal lies within a predetermined second range values, means causing such notes which give a difference value lying outside said first range of values to be rejected, and means causing such notes which give a difference value lying outside said second range of values to be rejected, whereby such notes which give said first and said second difference values lying within said first and said second range of values respectively are accepted.

13. An apparatus for checking bank notes or the like and for delivering genuine notes to a device for dispensing goods, such as gasoline, change, etc., said apparatus comprising a gauging means for gauging characteristic portions of a bank note, at least one of the gauged values representing the actual thickness of said note, signal producing means for producing a first signal representing the difference between gauged values obtained at said portions, means for determining whether or not the magnitude of said first signal lies within a predetermined first range of values, means causing such notes which give a difference value lying outside said first range of values to be rejected, means for comparing said at least one of said values representing the actual thickness of the note with a standard thickness value, means for producing a second difference signal representing the difference between said actual thickness and said standard thickness value, means for determining whether or not the magnitude of said second signal lies within a predetermined second range of values, and means for rejecting such notes which give a thickness difference value lying outside said predetermined second range of values, whereby such notes which give a first difference value and a second difference value lying within said first and said second ranges respectively and are of acceptable thickness are accepted.

14. An apparatus for checking bank notes or the like and for delivering genuine notes to a device for dispensing goods, such as gasoline, change, etc., said apparatus comprising a gauging means for gauging characteristic height portions of a bank note, signal producing means for producing a signal representing the difference between gauged values representing heights obtained at said portions, means for determining whether or not the magnitude of said signal lies within a predetermined range of values, and means causing such notes which give a difference value lying outside said range to be rejected and such notes which give a difference value lying within said range to be accepted.

15. An apparatus for checking bank notes or the like and for delivering genuine notes to a device for dispensing goods, such as gasoline, change, etc., said apparatus comprising a gauging means for gauging characteristic portions of a bank note, means for mechanically amplifying the difference between gauged values obtained at said portions, signal producing means for producing a signal representing the amplified difference between said gauged value obtained at said portions, means for determining whether or not the magnitude of said signal lies within a predetermined range of values, and means causing such notes which give a difference value lying outside said range to be rejected and such notes which give a difference value lying within said range to be accepted.

16. A method for checking bank notes or the like and for delivering genuine notes to an apparatus for dispensing goods, such as gasoline, change, etc., said method comprising the steps of gauging mechanical dimensions at at least two distinguishing portions of a bank note, producing a signal representing the difference between gauged values obtained at said portions, determining whether or not the magnitude of said signal lies within a predetermined range of values, and causing such notes which give a difference value lying outside said range to be rejected and such notes which give a difference value lying within said range to be accepted.

17. A method for checking bank notes or the like and for delivering genuine notes to an apparatus for dispensing goods, such as gasoline, change, etc., said method comprising the steps of measuring the mechanical dimensions at one portion of a note over a certain area and measuring the mechanical dimensions of another portion of said note over a considerably greater area, producing a signal representing the difference between the measured values, determining whether or not the magnitude of said signal lies within a predetermined range of values, and causing such notes which give a difference value lying outside said range to be rejected and such notes which give a difference value lying within said range to be accepted.

18. An apparatus for checking bank notes or the like and for delivering genuine notes to a device for dispensing goods, such as gasoline, change, etc., said apparatus comprising means for gauging mechanical dimensions at characteristic postions of a bank note, signal producing means for producing a signal representing the difference between gauged values obtained at said portions, means for determining whether or not the magnitude of said signal lies within a predetermined range of values, and means causing such notes which give a difference value lying outside said range to be rejected and such notes which give a difference value lying within said range to be accepted.

19. An apparatus for checking bank notes or the like and for delivering genuine notes to a device for dispensing goods, such as gasoline, change, etc., said apparatus comprising means for gauging mechanical dimensions at one portion of a note over a certain area and means for gauging mechanical dimensions at another portion of said note over a considerably greater area, means for producing a signal representing the difference between said gauged values, means for determining whether or not the magnitude of said signal lies within a predetermined range of values, and means for causing such notes which give a difference value lying outside said range to be rejected and such notes which give a difference value lying within said range to be accepted.

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