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⑤④ **Coin-free vending machine mechanism.**

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Description

This invention relates to coin or token-free vending machines, for installation in public places.

Modern coin-free vending mechanisms are commonly able to accept more than one size of coin, and a vend typically involves insertion by the customer of two or more coins in two different sizes. Hence, the machine needs to operate quite sophisticated totalisation and checking routines which are normally achieved electronically. However, in situations where a suitable electrical supply is not available, a machine relying on electronics is not appropriate.

In GB—A—2022898 there is described a coin-free dispensing mechanism in which two different kinds of coins selected and distinguished by a coin measuring apparatus are accumulated in two respective columns stacked edge-on-edge and when a customer attempts to pull a drawer and obtain a vended packet a mechanical coin-detecting means is operated to detect whether the requisite numbers of coins for the vend have been accumulated in the two columns. The columns of coins in the accumulator are disposed so that the coins in one column are substantially edge-to-edge horizontally with the coins in the other column and the coin-detection is performed by a single feeler that pushes horizontally against the edge of the top coin in one column and thereby that top coin is displaced slightly to push in its turn edge-to-edge against the top coin in the other column, whereby the check on the coin contents of both columns is performed by means of only the one feeler. This arrangement has been found to possess a number of restrictions in its use and it is an object of the present invention to provide an arrangement that is more versatile and reliable in its application.

More specifically, it is an object of the present invention to provide an all-mechanical coin-free dispensing mechanism capable of sophisticated operating routines and which has significant advantages over said prior all-mechanical arrangement.

According to the invention, a mechanical coin-free dispensing mechanism comprises coin measuring apparatus for accepting correctly-sized coins of at least two different sizes and rejecting wrongly-sized coins, and for separately routing the accepted coins of different sizes, coin-accumulating means to collect the accepted coins in at least a first column of coins of one sized stacked edge-on-edge and a second column of coins of a second size similarly stacked, mechanical coin-detecting means to detect if a requisite number of coins has accumulated in the coin-accumulating means, packet delivery means manually operable when unlocked to vend a packet and locking means for the packet delivery means which is coupled to the coin-detecting means to lock the packet delivery means and prevent a packet being vended if the coin detecting means fails to detect the requisite number of

coins in the coin-accumulating means, the coins passing through the mechanism solely by coin energy and the coin-detecting means being operated by the manual effort of the customer each time a customer attempts to hand-operate the packet delivery means, characterised in that respective independent first and second detecting means are provided for said first and second columns of coins in the coin-accumulating means, each said coin-detecting means being independently coupled by respective coupling means to the locking means, whereby both coin-detecting means operate simultaneously but independently of one another when an attempt is made to operate the packet delivery means and vend a packet.

In the preferred form, the coin measuring apparatus comprises successive gates each defined by parallel inclined top and bottom rails with an adjustable gap between them, coins of a selected size fitting between and travelling along the rails while oversize coins do not fit and undersize coins fall through the gap. The packet delivery means comprise packet-vending drawers to be pulled out by the customer, and the coin detecting means comprise pairs of arms with coin-sensing fingers that are coupled to locking sears for the drawers, the coin detecting arms moving to seek the presence of the top one of the required number of coins in each column of the accumulating means when a customer attempts to pull a drawer and the drawer being locked by its locking sear if said top coins are not detected.

Each drawer preferably contains a hinged flap that is depressed on to the bottom of the drawer if the drawer contains a packet to be vended but springs up when the drawer is empty and also when a vended packet is removed by the customer, this rising of the flap serving to lock the drawer, if the drawer has not been pulled out, and also denying access to the back of the drawer and the dispenser above if the drawer has been pulled out and a vended packet removed.

Also in the preferred form, the columns of coins in the coin accumulating means are supported on the upper edges of hinged coin deflector flaps coupled to further sears associated with the drawers and with a coin refund button, whereby when a drawer is pulled out the deflector flaps swing one way to allow the coins to fall from the accumulating means and to direct them into the coin boxes, and if a drawer is not pulled out but the refund button is operated the deflector flaps swing another way to allow the coins to fall into a refund chute returning them to the customer.

One embodiment of the invention will now be discussed in more detail to illustrate the adoption of the invention in practice.

The mechanism described herein controls the coin/token-free release of two independent dispensing drawers in a twin column packet vending machine, by selectively storing accepted coins of one single or two differing diameters in one or two accumulator columns, respectively, so as to allow for release of either drawer in response to

accumulation of the same or differing coin totals in either or both columns, non-accepted (rejected) coins being returned to the user immediately.

The mechanism will accept all coins/token discs which can pass through a restrictor slot of fixed dimensions and will select and accumulate coins of one or two specific diameters from those inserted, so that upon subsequent pulling of one or other of the two associated dispensing drawers there will be a coin freed drawer movement provided a certain coin total preset for the particular drawer that the user wishes to pull has accumulated made up of coins of either or both of the selected coin diameters, as required.

The user can obtain return of all accumulated coins by pushing a "coin return" button prior to either drawer being successfully operated. Rejected coins are returned immediately following their insertion. Coins successfully selected by diameter are further subjected to a thickness check on entering the respective accumulator, which leads to the rejection of over-thick coins, these being returned as above to the user.

The setting of accumulator coin-total sensors is achieved by moving slidable sensing fingers along vertical detented tracks so that their position coincides in each case with the horizontal centre line of the "final" coin of each required tally, four such sensors allowing a different coin total setting for each of the independent drawers, each of which totals can be made up of coins of either or both sizes.

Arrangements according to the invention will now be described by way of example with reference to the accompanying drawings, in which:—

Figure 1 is a flow diagram of the coin-freed vending machine mechanism to be described,

Figure 2 is a diagrammatic side elevation of the coin selector/rejector assembly,

Figure 3 is a view in section on the line E—E of Figure 2,

Figure 4 is a diagrammatic side elevation of the coin accumulator assembly,

Figure 5 is a view in section on the line G—G of Figure 4,

Figure 6 is a view in section on the line H—H of Figure 4,

Figure 7 is a view in section on the line F—F of Figure 4,

Figure 8 is a diagram of the coin sensor assembly and encash/refund mechanism, and

Figure 9 is a diagram of detail of a dispensing drawer.

The flow diagram of Figure 1 shows the general sequence of events following insertion of a coin into the dispenser. It should be noted that at all times the user's money is "safe", i.e. all accumulated coins are retrievable, prior to the successful operation of either drawer, by pressing the coin return button.

After a coin is inserted, as at 1, a test is performed at a first gate 2 to determine if the coin diameter equals a first preset diameter x. If the answer is "yes" the coin is routed in the direction

of a first accumulator 17 for coins of diameter x. If the coin diameter is too small the coin is ejected for return to the user at a refund cup 16. If the coin is too big it passes for test at a second gate 3 to determine if the coin diameter equals a second and larger preset diameter y. If the answer is "yes" the coin is routed in the direction of a second accumulator 18 for coins of diameter y. If the coin is too small or too big it is rejected to the refund cup 16. Coins of diameter x en route to the accumulator 17 are subjected at 5 to a thickness test; if a coin is too thick it is rejected to the refund cup. Coins of diameter y en route to the accumulator 18 are likewise subjected at 4 to a thickness test and coins that are too thick rejected to the refund cup. Coins of diameters x and y that pass the thickness test are stacked in the accumulators 17 and 18 respectively.

At any time before a drawer is pulled, the user can obtain return of the coins stacked in the accumulators 17 and 18 by pressing the coin return button 6. If the left-hand drawer 7 is pulled, the right-hand drawer 8 is locked, and vice versa, and if either drawer is pulled the coin return button 6 is disabled. Before a drawer is released, both the sensor 9 of the accumulator 17 and the sensor 10 of the accumulator 18 must be registering the presence of the required tally of coins in the respective accumulator. If either sensor is not registering the required tally, the drawers remain locked, as at 11 or 12. When a drawer has been released and pulled, as at 13, all the coins stacked in the accumulators pass into the coinboxes of the machine, as at 14. The operating cycle is completed by automatic re-locking of the drawer, at 15, when the drawer is returned after removal of the dispensed packet.

The coin selector/rejector assembly will now be described with reference to Figures 2 and 3.

In this device each coin rolls on bottom rails 21 past one or both "gates" 2, 3, whose top-rail height, defined by respective plates 19, 20, is accurately adjustable within a preset range (15—30 mm). Each gate selects coins within a specified diameter tolerance band ($X \pm 0.35$ mm or $Y \pm 0.35$ mm) for accumulation. Selected coins S fit between the top and bottom rails, undersize coins R fall through, and oversize coins P cannot fit beneath the top rail.

Each gate top plate 19 or 20 carries two location pins 22 which, in conjunction with a respective pair of pins 23 on the main structure 24 of the selector/rejector, allow accurate positioning of the plates 19, 20 by accurate setting of the pin centre lines dimension "D", without recourse to trial and error methods with coins. These settings are made by using pre-drilled templates unique to each particular coin type, which templates are removable parts of the accumulator assembly, in that they also serve as coin gauge plates in the respective accumulator columns. Thus, in the event of a need to change the device from operating on coin types A and B to coin types A and C, the total part change requirement is limited to a single coin gauge plate exchange—the new

plate also serving to allow accurate re-adjustment of the respective gate dimension "D" so as to select coins of type C.

Each gate 2, 3 is, in effect, a pair of associated diameter sensing elements offering triple choice of the result (oversize or correct size or undersize) in a single coin pass, rather than the normal dual choice (oversize or undersize). This considerably simplifies the task of selecting two differing coin diameters from all those inserted into the unit.

The coin accumulator unit is shown in Figures 4 to 7.

This device accepts coins of one or two diameter sizes arriving through two separate chutes from the selector/rejector assembly mounted above it, and stacks them in two vertical columns 25, 26 so the coins 27 rest edge-on-edge with their rims presented for detection by the adjacent coin sensor assembly. The column widths are set at approximately $1.25 \times$ coin thickness in each case, there being face plates 29, 30 secured to opposite sides of the accumulator body 28 each of which defines with the body 28 a slot 31 or 32 to suit the particular coin. Each face plate 29, 30 is a piece of flat sheet metal with the top portion 35 cranked outwards to form a coin chute (Figure 7).

The horizontal dimension of each column 25, 26 of the accumulator in the plane of the coin diameters is determined by a coin gauge plate 85, 86 which is replaceable, being, as already described, the actual template utilized to set the respective selector/rejector gate dimension "D". Since each coin gauge plate is clamped between the respective face plate 29, 30 and the accumulator body 28, it also determines, by its thickness, the width of the respective coin slot 31, 32. Coins of greater thickness than the respective column width are unable to enter the top of the slot 31 or 32 but are arrested on an inclined hard metal coin check bar 33 set into the accumulator body 28 at the throat of the coin chute defined between the accumulator body and the cranked portion 35 of the respective face plate 29, 30. Over-size coins roll down the coin check bar and eject into a reject chute 36 adjacent the accumulator body and common to both columns. Thus any coin selected for correct diameter but over-size as regards thickness is not able to block the top of the respective accumulator coin column but is rejected and returned to the user.

The coin sensor assembly is shown in Figure 8.

This assembly comprises two pairs of sensing fingers 37, 38, one pair for each coin column, carried on pivotally-mounted arms 39, 40. The right hand arms of each pair are connected by links 41 to sears 46 cooperating with a cam profile 42 on the left hand drawer 7, and the left hand arms are likewise connected by links 43 to sears 47 cooperating with a cam profile 44 on the right hand drawer 8. Each pair of arms has a tension spring 45 pulling the arms toward one another. When the drawers are fully home, the fingers 37, 38 on the arms 39, 40 are held out away from the coin columns in the slots 31, 32. As soon as either drawer 7 or 8 is pulled, the cam profile 42 or 44

allows one arm and sensor finger of each pair to swing inward. If the required tally of coins is present in both coin columns of the accumulator, both fingers 37 and 39 will be arrested by encountering coins 27 and the drawer is released. But if only one of the columns does not contain enough coins, the respective finger and arm will not be arrested, as a consequence of which at least one of the two sears 46 or 47 appertaining to that drawer will fully enter a recess 48 or 49 in the drawer and lock it against further movement. Assuming, however, the drawer is released, the sears 46 or 47 will only effect slight entry into the recess 48 or 49 and will then be cammed out again by a profile 50 or 51, thereby returning the fingers 37, 38 to the rest position out of contact with the coins 27 so that they will not interfere with subsequent dropping of the coins into the coin boxes.

Should drawer release be required without a coin tally in either or both columns for either or both drawers, positioning the relevant coin sensor(s) 37/38 at the extreme top detented position of their travel causes the sensor(s) to abut a flange on the sensor mechanism chassis which prevents inward movement of the sensor(s), the result being as if the presence of a coin has been correctly sensed.

The encash/reject system for the coins is also shown in Figure 8.

A further drawer cam/sear arrangement comprises two opposed abutting bars 52, 53 urged toward one another by a spring 92, and a freely slidable sear-ended interlock bar 90 which co-operates at one end with a recess 54 and cam profile 55 of the left-hand drawer 7, and at the other with a recess 56 and cam profile 57 of the right-hand drawer 8. If one drawer is pulled the interlock bar 90 is cammed in the direction of the other drawer by the cam profile 55 or 57 on the pulled drawer, thereby immediately locking the other drawer by entry of the relevant sear-shaped end 91 into its recess 56 or 54. Movement of either drawer up to the point at which the coin sensor assembly has completed its lock/no lock action, depending upon the acceptability of the coin situation, causes the interlock bar 90 to slide laterally to achieve its locking task on the opposing drawer through the action of the initial cam profile 55 or 57 on the moving drawer, the extent of this cammed movement being just sufficient to bring a shoulder 93 on the interlock bar into contact with an opposing shoulder 94 on the bar 52 or 53. Further coin-freed drawer extension causes a short parallel section 58 of the cam profile on the drawer to be pulled past the interlock sear 91, after which a second cam 95 causes further lateral movement of the interlock bar and consequently of the bars 52 and 53 by virtue of the engagement of the shoulders 93, 94.

The coins 27 in the two accumulator slots 31, 32 are supported on the upper edges of two coin deflector flaps 59, hinged near their lower edges, as at 62, and held upright against the action of a compression spring 60 by engagement of their

edges with shoulders 61 on the bars 52, 53. The two deflector flaps are so linked to one another that they are constrained to swing inward toward one another in unison or outward away from one another in unison. On pulling of a drawer, the movement of both bars 52, 53 to the left or right, as the case may be, results in one of the bar shoulders 61 pushing one deflector flap inward against the action of the spring 60, so that both flaps 59 are caused to swing inward whereby the coins in both accumulator columns are allowed to fall and are directed by the flaps 59 outward into the machine coin boxes 63.

When the bars 52, 53 are centred, a refund button 64 at the front of the machine can be pushed inward against the action of a compression spring 65, whereupon inwardly directed cam fingers 66 on the refund button engage pins 67 on the bars 52, 53 and cam both bars outwardly away from one another against the action of the interconnecting spring 92. This causes the bars 52, 53 to constrain the interlock bar 90 to remain in a centred position, by reason of engagement of the shoulders 93, 94, in which situation both drawers are locked. Also, by reason of movement of the shoulders 61 outward, it allows the coin deflector flaps 59 to be swung outward away from one another by the spring 60 with the result that the coins in the accumulator columns fall and are directed inward by the flaps 59 into a central chute 68 that delivers them to the refund cup 16. However, when a drawer is pulled, the pins 67 on the bars 52, 53 are shifted laterally to the left or right and one or other of them will consequently block inward movement of one or other of the cam fingers 66 and so the refund button 64 is then temporarily disabled.

Each drawer has a return spring 69 and a two-way ratchet mechanism that is disengaged both when the drawer is fully home and when it is pulled right out but runs into engagement soon after opening or closing movement of the drawer is commenced. This mechanism comprises a rack 96 with triangular teeth on the drawer, and a cooperating square-nosed pawl 97 pivoted on the machine frame and having a spring 98 keeping it in a centred or neutral position when it is out of engagement with the rack teeth. Following successful completion of the coin-sensing operation, the ratchet commences to operate on the moving drawer so that return of the drawer is positively prevented until nearly full extension of the drawer is achieved. Return of the drawer is similarly controlled, re-extension being prevented once the ratchet is re-engaged, so that only inward motion of the drawer is possible right up to the re-engagement of the coin sensing latches, just before achieving the "home" position for the drawer.

Figure 9 shows detail of a drawer 7 or 8.

A thin substantially horizontal rectangular flap 70 lies in a recess 71 in the bottom of each drawer near the back end of the drawer and is hinged at its rear edge, at 72, the hinge axis extending horizontally across the drawer. The flap 70 is

lightly spring-loaded by a spring 73 which, if the drawer is empty, urges the flap up out of the recess 71 into a position in which the front edge 74 of the flap is raised to the level of the tops of the drawer sides 75. Two hooked extensions 76 on the rear of the flap 70 behind the hinge line project downwards through holes 77 in the drawer bottom and, when the flap rises under the spring force acting on it, the hooks 76 are lowered, to engage with rearwardly and upwardly directed projections 78 pressed up from the metal of the fixed chassis 79 of the dispenser if an attempt is made to pull out the empty drawer. By this means the drawer is locked when empty. When a packet 96 to be vended is contained in the drawer, the flap lies flat in the bottom of the drawer under the weight of the packet and the hooks 76 are raised clear of the projections 78 so that they do not prevent pulling out of the drawer.

In this way, pulling out of a drawer is positively prevented if there are no packets to vend. Furthermore, when a full drawer is pulled out and the packet 96 therein removed, the spring-loaded flap 70 will immediately rise and seal off the rear part of the drawer space and the interior of the dispenser above the drawer, thus greatly reducing the possibility of theft of or tampering with the packets still in the dispenser above the drawer through the drawer aperture. A leaf spring 80 attached to the chassis 79 under the drawer is arranged to engage a downward protuberance 81 on the flap 70 just forward of the hinge 72 so as to considerably increase the upward spring force on the flap during the final part of drawer outward travel. This proffers the packet being vended to the customer and also improves the anti-theft feature, without compromising the lightness of the initial spring force of the spring 73, thereby ensuring that the weight of a single packet can depress the flap 70 when the drawer is in its usual position retracted inside the machine.

Claims

1. A mechanical coin-freed dispensing mechanism, comprising:—

coin measuring apparatus for accepting correctly-sized coins of at least two different sizes and rejecting wrongly-sized coins, and for separately routing the accepted coins of different sizes, coin-accumulating means (17, 18) to collect the accepted coins in at least a first column of coins (25) of one sized stacked edge-on-edge and a second column of coins (26) of a second size similarly stacked, mechanical coin-detecting means (37, 38, 39, 40) to detect if a requisite number of coins has accumulated in the coin-accumulating means, packet delivery means (7, 8) manually operable when unlocked to vend a packet and locking means (46, 47) for the packet delivery means which is coupled to the coin-detecting means to lock the packet delivery means and prevent a packet being vended if the coin-detecting means fails to detect the requisite number of coins in the coin-accumulating means,

the coins passing through the mechanism solely by coin energy and the coin-detecting means being operated by the manual effort of the customer each time a customer attempts to hand-operate the packet delivery means, characterised in that respective independent first and second detecting means (37, 39 and 38, 40) are provided for said first (25) and second (26) columns of coins in the coin-accumulating means, each said coin-detecting means being independently coupled by respective coupling means (41, 43) to the locking means (46, 47), whereby both coin-detecting means operate simultaneously but independently of one another when an attempt is made to operate the packet delivery means and vend a packet.

2. A mechanism according to Claim 1, wherein the coin measuring apparatus comprises successive gates (2, 3) each defined by parallel inclined top and bottom rails (19, 20, 21) with an adjustable gap between them, coins of a selected size fitting between and travelling along the rails while oversize coins do not fit and undersize coins fall through the gap.

3. A mechanism according to Claim 1 or Claim 2, wherein the packet delivery means comprises packet-vending drawers (7, 8) to be pulled out by the customer, and the coin detecting means comprise pairs of arms (39, 40) with coin-sensing fingers (37, 38) that are coupled to locking sears (46, 47) for the drawers, the coin detecting arms moving to seek the presence of the top one of the required number of coins in each column (25, 26) of the accumulating means (17, 18) when a customer attempts to pull a drawer and the drawer being locked by its locking sear if said top coins are not detected.

4. A mechanism according to Claim 3, wherein each drawer (7, 8) contains a hinged flap (70) that is depressed on to the bottom of the drawer if the drawer contains a packet to be vended but springs up when the drawer is empty and also when a vended packet is removed by the customer, this rising of the flap serving to lock the drawer, if the drawer has not been pulled out, and also denying access to the back of the drawer and the dispenser above if the drawer has been pulled out and a vended packet removed.

5. A mechanism according to Claim 3 or Claim 4, wherein the columns (25, 26) of coins in the coin accumulating means (17, 18) are supported on the upper edges of hinged coin deflector flaps (59) coupled to further sears (91) associated with the drawers and with a coin refund button (64), whereby when a drawer is pulled out the deflector flaps swing one way to allow the coins to fall from the accumulating means and to direct them into the coin boxes, and if a drawer is not pulled but the refund button (64) is operated the deflector flaps swing another way to allow the coins to fall into a refund chute (68) returning them to the customer.

6. A mechanism according to Claim 3 or Claim 4 or Claim 5, wherein there are two locking sears for each drawer (7, 8) operatively connected respec-

tively to coin-sensing fingers for the first and second columns (25, 26) of coins.

7. A mechanism according to any one of the preceding claims, wherein in the coin accumulating means the coins of each column are stacked in a coin slot (31, 32) that will not accept coins that are oversize in thickness, such oversize coins being arrested on a coin check bar (33) at an entry throat of the coin slot and diverted into a reject chute (36).

8. A mechanism according to any one of Claims 3 to 6, or Claim 7 taken with Claim 3, wherein two packet-vending drawers (7, 8) are provided, and a laterally-movable sear-ended interlock bar (90) cooperating with cam means (55, 57) on both drawers is operable to lock either drawer when the other is pulled.

9. A mechanism according to Claims 5 and 8, wherein operation of the refund button (64) holds the interlock bar (90) in a centred position and locks both drawers, and lateral movement of the interlock bar when a drawer is pulled prevents the refund button being operated.

10. A mechanism according to Claim 9, wherein on pulling of a drawer the lateral movement of the interlock bar (90) to lock the other drawer takes place in two steps corresponding to two positions of drawer extension, the first step initially locking the other drawer and the second step releasing the coins into the coin boxes.

11. A mechanism according to Claim 10, wherein each drawer (7, 8) has a ratchet (96, 97) that engages to prevent the drawer from being pushed back in, until it has first been pulled out substantially fully, before the second step of movement of the interlock bar.

12. A mechanism according to Claim 11, wherein the ratchet mechanism (96, 97) also engages when a fully pulled out drawer is pushed partly in, to prevent the drawer being pulled out again until it has been pushed fully in.

13. A mechanism according to Claim 4, or any one of Claims 5 to 12 taken with Claim 4, wherein the hinged flap (70) in each drawer (7, 8) is lightly spring-loaded upward so that the weight of a packet to be vended can depress it, and a stronger spring (80) is provided to engage the flap and lift it with the packet on it during the final part of outward travel of the drawer when it is pulled.

Patentansprüche

1. Mechanischer münzenbetätigter Ausgabe-mechanismus mit einer Münzenmeßeinrichtung zur Annahme von richtig dimensionierten Münzen wenigstens zweier Größen und zum Abweisen falsch dimensionierter Münzen und zum getrennten Leiten der angenommenen Münzen unterschiedlicher Größe, mit Münzensammelmit-teln (17, 18) zum Sammeln der angenommenen Münzen in wenigstens einer Münzensäule (25) einer Größe gestapelt Kante auf Kante und einer zweiten Münzensäule (26) einer zweiten Größe entsprechend gestapelt, mechanische Münzen-prüfmittel (37, 38, 39, 40) zur Prüfung, ob eine

erforderliche Anzahl von Münzen in den Münzensammelmitteln gesammelt worden ist, Päckchenabgabemitteln (7, 8), die manuell betätigt, wenn sie gelöst sind, zum Verkauf eines Päckchens dienen und Sperrmitteln (46, 47) für die Päckchenausgabemittel gekoppelt mit den Münzenprüfmitteln zum Sperren der Päckchenausgabemittel und zur Verhinderung, daß ein Päckchen verkauft wird, wenn die Münzenprüfmittel nicht die erforderliche Münzenzahl in dem einen Münzensammelmittel enthält, und wobei die Münzen durch den Automaten allein mittels ihrer Energien durchgehen und die Münzenprüfmittel von dem Bediener jeweils dann betätigt werden wenn der Bediener manuell versucht die Päckchenausgabemittel mit der Hand zu bedienen, dadurch gekennzeichnet, daß entsprechend unabhängige erste und zweite Prüfmittel (37, 39 und 38, 40) für die erste (25) und zweite (26) Säule vorgesehen sind in den Münzensammelmitteln und daß jedes der Münzensammelmittel unabhängig durch entsprechende Kupplungsmittel (41, 43) mit den Sperrmitteln (46, 47) gekoppelt ist, wobei beide Münzenprüfmittel gleichzeitig aber unabhängig voneinander arbeiten wenn ein Versuch gemacht wurde die Päckchenausgabemittel zu bedienen, um ein Päckchen zu kaufen.

2. Mechanismus nach Anspruch 1, wobei die Münzenmeßeinrichtung aufeinanderfolgende Tore (2, 3) aufweist, die jeweils gebildet sind durch parallele schräge obere und untere Schienen (19, 20, 21) mit einem einstellbaren Spalt dazwischen, wobei Münzen einer ausgewählten Größe zwischen diese passen und entlang der Schienen sich bewegen während übergroße Münzen nicht passen und kleinere Münzen durch den Spalt fallen.

3. Mechanismus nach Anspruch 1 oder 2, wobei die Päckchenausgabemittel Päckchenverkaufszüge (7, 8) enthalten, die vom Bediener herauszuziehen sind, daß die Münzenprüfmittel Armpaare (39, 40) mit Münzenfühlfingern (37, 38) aufweisen, die mit Sperrmitteln (46, 47) für die Züge gekoppelt sind und die Münzenprüfarme sich bewegen um die Anwesenheit der obersten der erforderlichen Anzahl der Münzen in jeder Säule (25, 26) der Sammelmittel (17, 18) zu suchen, wenn ein Bediener einen Zug herauszuziehen versucht und wobei der Zug blockiert wird durch seine Sperrmittel wenn die obere Münze nicht festgestellt wird.

4. Mechanismus nach Anspruch 3, wobei jeder Zug (7, 8) eine schwenkbare Klappe (70) aufweist, die auf den Boden des Zuges gedrückt wird, wenn der Zug zu verkaufende Päckchen enthält aber hochspringt wenn der Zug leer ist und auch dann wenn ein verkauftes Päckchen von dem Bediener entfernt wird, wobei dieses Anheben der Klappe dazu dient den Zug zu sperren wenn der Zug nicht herausgezogen worden ist und auch einen Angriff auf das Rückteil des Zuges und den Spender darüber zu verhindern, wenn der Zug herausgezogen worden ist und ein verkauftes Päckchen entfernt wurde.

5. Mechanismus nach Anspruch 3 oder 4, wobei

die Säulen (25, 26) der Münzen in den Münzensammelmitteln (17, 18) von der oberen Kante einer schwenkbaren Münzenablenkplatte (59) getragen werden, die mit weiteren Sperrmitteln (91) gekoppelt sind, die mit den Zügen verbunden sind und mit einem Münzenrückerstattungsknopf (64), wobei dann wenn der Zug herausgezogen worden ist die Ablenkplatte in einer Richtung schwenkt um es den Münzen zu ermöglichen aus dem Sammelmittel herauszufallen und sie in die Münzenboxen zu dirigieren und wenn der Zug nicht herausgezogen worden ist aber der Rückgabeknopf (64) betätigt wurde dann schwenkt die Ablenkplatte in eine andere Richtung um es den Münzen zu ermöglichen in die Rückgaberrutsche (68) zu fallen zum Zurückgeben an den Bediener.

6. Mechanismus nach Anspruch 3 oder 4 oder 5; wobei zwei Sperrmittel für jeden Zug (7, 8) arbeitsmäßig verbunden sind mit den entsprechenden Münzenfühlfingern für die erste und die zweite Säule (25, 26) von Münzen.

7. Mechanismus nach einem der vorstehenden Ansprüche, wobei in den Münzensammelmitteln die Münzen jeder Säule in einem Münzenschlitz (31, 32) gestapelt sind, der keine in der Dicke überdimensionierten Münzen aufnimmt, so daß überdimensionierte Münzen auf einem Münzenprüfriegel (33) am Eintritt des Münzenschlitzes festgehalten und in die Abweiserutsche (36) abgelenkt werden.

8. Mechanismus nach einem der Ansprüche 3 bis 6 oder 7 unter Berücksichtigung von Anspruch 3, wobei zwei Päckchen Verkaufszüge (7, 8) vorgesehen sind und eine querbewegliche Verriegelungsstange (90) mit Nockenmitteln (55, 57) an den beiden Zügen zusammenwirkt, um den einen Zug zu blockieren, wenn der andere Zug herausgezogen wird.

9. Mechanismus nach Anspruch 5 und 8, wobei die Betätigung des Rückgabeknopfes (64) die Verriegelungsstange (90) in einer mittleren Position hält und beide Züge blockiert und wobei die Querbewegung der Verriegelungsstange, wenn ein Zug herausgezogen worden ist, eine Betätigung des Rückgabeknopfes verhindert.

10. Mechanismus nach Anspruch 9, wobei beim Herausziehen eines Zuges die Querbewegung der Verriegelungsstange (90) zum Verriegeln des anderen Zuges in zwei Stufen erfolgt, entsprechend zweier Positionen der Zugsbewegung, wobei bei der ersten Stufe anfänglich der andere Zug gesperrt ist und bei der zweiten Stufe die Münzen freigegeben werden in die Münzenboxen.

11. Mechanismus nach Anspruch 10, wobei jeder Zug (7, 8) ein Gesperr (96, 97) aufweist, das so eingreift, daß es verhindert, daß der Zug zurückgestoßen wird bis er zunächst im wesentlichen vollständig herausgezogen worden ist vor der zweiten Stufe der Bewegung der Verriegelungsstange.

12. Mechanismus nach Anspruch 11, wobei das Gesperr (96, 97) auch in Eingriff kommt, wenn ein vollständig herausgezogener Zug teilweise zurückgestoßen wird, um zu verhindern, daß der

Zug erneut herausgezogen wird bevor er vollständig zurückgestoßen wurde.

13. Mechanismus nach Anspruch 4 oder einem der Ansprüche 5 bis 12 unter Berücksichtigung von Anspruch 4, wobei die schwenkbare Klappe (70) in jedem Zug (7, 8) unter geringer Federlast steht, so daß das Gewicht des zu verkaufenden Päckchens sie niederdrückt und daß eine stärkere Feder (80) vorgesehen ist, die mit der Klappe in Eingriff bringbar ist und diese anhebt mit dem Päckchen darauf während des letzten Teiles des Auswärtsbewegung des Zuges wenn dieser gezogen wird.

Revendications

1. Distributeur actionné mécaniquement par des pièces de monnaie comprenant:

un appareil de mesure pour accepter des pièces de dimensions correctes d'au moins deux dimensions différentes et rejeter les pièces de dimensions incorrectes et pour acheminer séparément les pièces acceptées de différentes dimensions, des dispositifs d'accumulation de pièces (17, 18) pour recueillir les pièces acceptées dans au moins une première colonne de pièces (25) d'une dimension, empilées cordon à cordon, et une seconde colonne de pièces (26) d'une seconde dimension empilées de la même façon, des systèmes de détection mécanique de pièces (37, 38, 39, 40) pour déceler si un nombre requis de pièces a été accumulé dans les dispositifs d'accumulation, des dispositifs de livraison (7, 8) de sachet actionnables manuellement quand ils sont débloqués pour mettre un sachet à disposition et des systèmes de blocage (46, 47) pour le dispositif de livraison des sachets qui est couplé au système de détection de pièces pour bloquer le dispositif de livraison et empêcher de mettre un sachet à disposition si le système de détection de pièce ne peut pas détecter le nombre requis de pièces dans les dispositifs d'accumulation de pièces, les pièces traversant le mécanisme seulement par l'énergie de la pièce, et le système de détection de pièces étant actionné l'effort manuel de l'utilisateur chaque fois qu'un utilisateur tente de faire fonctionner manuellement le dispositif de livraison du sachet, caractérisés en ce que des systèmes de détection indépendants respectivement, premier et second indépendants (37, 39 et 38, 40) sont pourvus pour les première (25) et seconde (26) colonnes de pièces des dispositifs d'accumulation, chacun d'eux étant couplé indépendamment par des dispositifs de couplage respectifs (41, 43) aux systèmes de blocage (46, 47), grâce à quoi les deux systèmes de détection de pièces opèrent simultanément mais indépendamment l'un de l'autre quand une tentative est effectuée pour actionner le dispositif de livraison du sachet et pour mettre un sachet à disposition.

2. Mécanisme selon la revendication 1 dans lequel l'appareil de mesure des pièces comporte des portes successives (2, 3) chacune étant définie par des rails inclinés parallèles supérieur et inférieur (19, 20, 21) avec un intervalle réglable

entre eux, des pièces d'une dimension choisie s'adaptant entre et circulant le long des rails tandis que les pièces de dimension trop grande ne s'adaptent pas et les pièces de dimension trop petite tombent à travers l'ouverture.

3. Mécanisme selon la revendication 1 ou la revendication 2, dans lequel le dispositif de livraison du sachet comprend des tiroirs de mise à disposition des sachets (78) destinés à être tirés manuellement par l'utilisateur et les systèmes de détection de pièces comprennent des paires de bras (39, 40) avec des doigts palpant les pièces (37, 38) qui sont couplés à des gâchettes de blocage (46, 47) pour les tiroirs, les bras de détection de pièces se déplaçant pour rechercher la présence celle du dessus du nombre requis de pièces dans chaque colonne (25, 26) des dispositifs d'accumulation (17, 18) quand un consommateur tente de tirer un tiroir, ce dernier étant bloqué par sa gâchette de blocage si lesdites pièces de dessus ne sont pas détectées.

4. Mécanisme selon la revendication 3, dans lequel chaque tiroir (7, 8) comporte un volet pivotant (70) qui est appliqué vers le bas sur le fond du tiroir si ce dernier contient un sachet destiné à être mis à disposition mais remonte vers le haut quand le tiroir est vide et également quand un sachet mis à disposition est enlevé par le client, cette levée du volet servant à bloquer le tiroir si ce dernier n'a pas été tiré à l'extérieur et également empêchant l'accès au dos du tiroir du distributeur au-dessus si le tiroir a été tiré à l'extérieur et un sachet mis à disposition retiré.

5. Mécanisme selon la revendication 3 ou 4, dans lequel les colonnes de pièces (25, 26) dans les dispositifs d'accumulation (17, 18) sont supportés par les arêtes supérieures de volets défecteurs de pièces (59) couplé à d'autres gâchettes (91) associés aux tiroirs et avec un bouton de retour de pièces (64), de manière à ce que dans le cas où un tiroir est tiré à l'extérieur les volets de déflexion pivotent d'un côté pour permettre aux pièces de tomber des dispositifs d'accumulation et les diriger dans les boîtes de pièces, et si un tiroir n'est pas tiré mais que le bouton de retour de pièces (64) est actionné, le volet de déflexion pivote d'un autre côté pour permettre aux pièces de tomber dans une goulotte de retour (68) les restituant au client.

6. Mécanisme selon la revendication 3 ou la revendication 4 ou la revendication 5, dans lequel il y a deux gâchettes de blocage pour chaque tiroir (7, 8) reliés fonctionnellement respectivement aux doigts de palpation de pièces des première et seconde colonnes de pièces (25, 26).

7. Mécanisme selon l'une quelconque des revendications précédentes, dans lequel dans les dispositifs d'accumulation les pièces de chaque colonne sont empilées dans une fente pour pièces (31, 32) qui n'acceptera pas des pièces qui sont trop épaisses de telles pièces de trop grandes dimensions étant arrêtées sur une tige de contrôle de pièce (33) à une gorge d'entrée de la fente pour pièces et déviées dans une goulotte de retour (36).

8. Mécanisme selon l'une des revendications 3 à 6, ou selon la revendication 7 en association avec la revendication 3, dans lequel on prévoit deux tiroirs pour la mise à disposition de sachets (7, 8) et une tige de blocage (90) déplaçable latéralement à extrémités en forme de gâchette coopérant avec des dispositifs à cames (55, 57) sur les deux tiroirs actionnable pour bloquer chacun des tiroirs quand l'autre est tiré.

9. Mécanisme selon les revendications 5 et 8, dans lequel l'actionnement du bouton de retour de pièces (64) retient la tige de blocage (90) dans une position centrée et bloque les deux tiroirs, et le déplacement latéral de la tige de blocage quand un tiroir est tiré empêche le fonctionnement du bouton de retour de pièces.

10. Mécanisme selon la revendication 9, dans lequel lors de la traction d'un tiroir le déplacement latéral de la tige de blocage (90) pour bloquer l'autre tiroir se déroule en deux étapes correspondant à deux positions de sortie du tiroir, la première étape bloquant initialement l'autre tiroir et la seconde étape relachant les pièces dans la boîte à pièces.

11. Mécanisme selon la revendication 10, dans lequel chaque tiroir (7, 8) comporte un cliquet (96, 97) qui vient en prise pour éviter au tiroir d'être repoussé jusqu'à ce qu'il ait été d'abord retiré pratiquement complètement, avant la seconde étape de déplacement de la tige de blocage.

12. Mécanisme selon la revendication 11, dans lequel le système de cliquet (96, 97) vient également en prise quand un tiroir complètement tiré à l'extérieur est repoussé partiellement pour éviter au tiroir d'être à nouveau tiré vers l'extérieur jusqu'à ce qu'il ait été repoussé complètement à l'intérieur.

13. Mécanisme selon la revendication 4, ou l'une quelconque des revendications 5 à 12 associées à la revendication 4, dans lequel le volet pivotant (70) dans chaque tiroir (7, 8) est légèrement chargé vers le haut par un ressort de sorte que la masse d'un sachet à mettre à disposition puisse le comprimer vers le bas, et un ressort plus fort (80) est prévu pour engager le volet et le soulever avec le sachet reposant sur lui pendant la partie finale du trajet vers l'extérieur du tiroir quand ce dernier est tiré.

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Fig. 1.

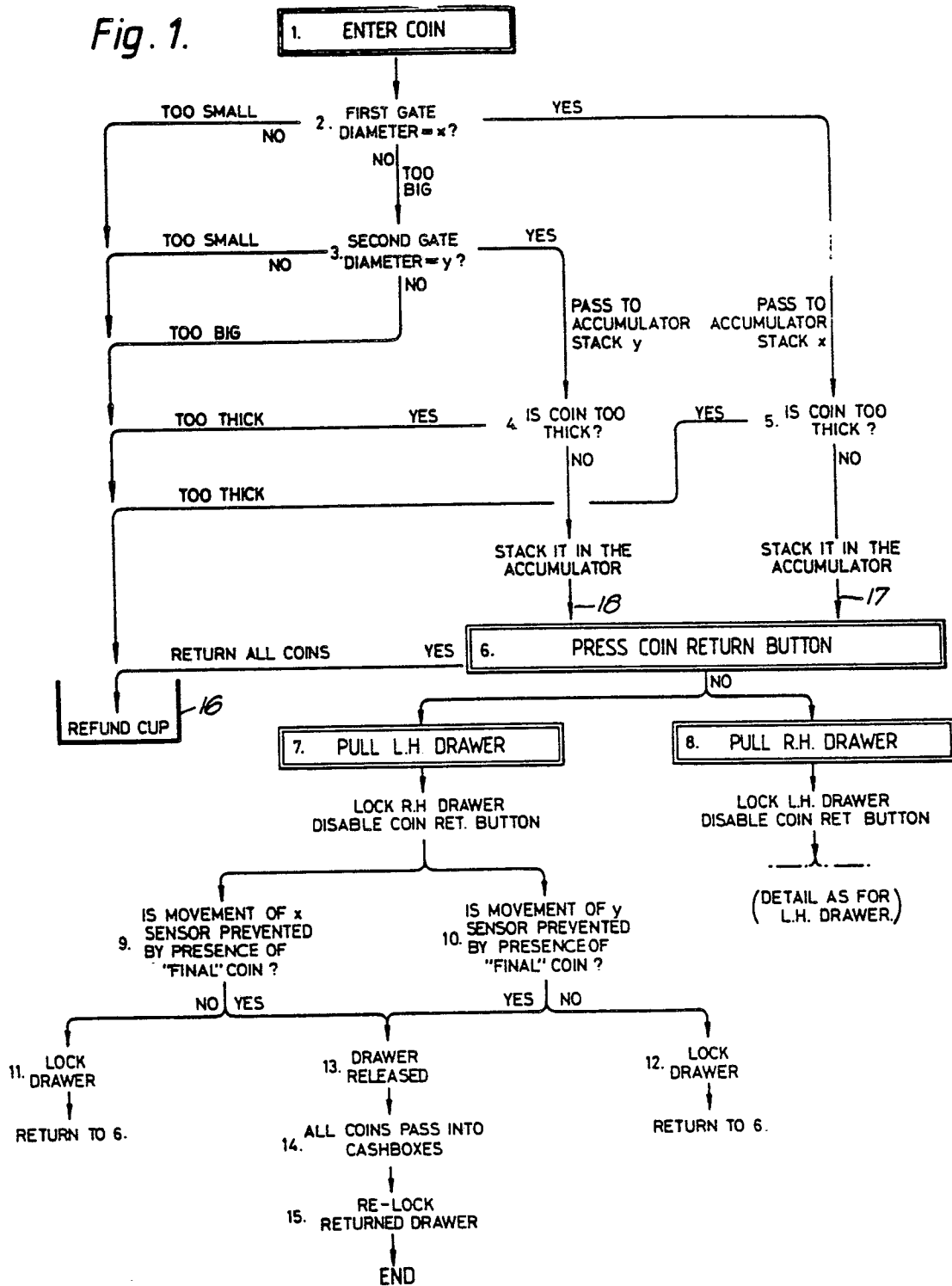


Fig. 2.

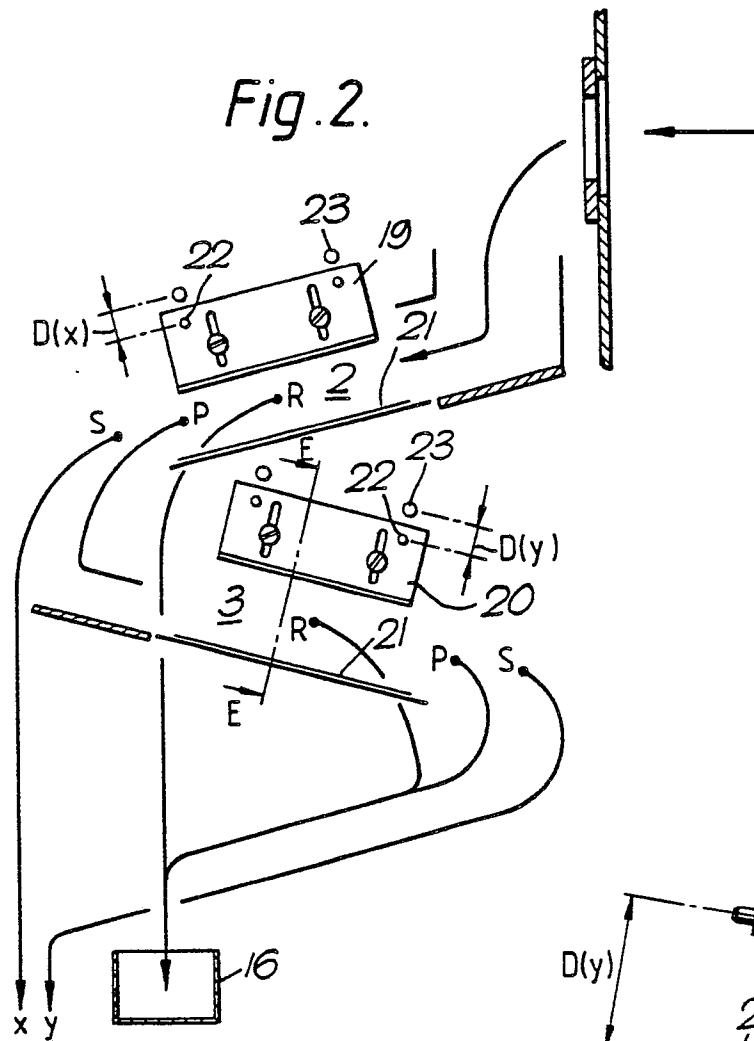


Fig. 3.

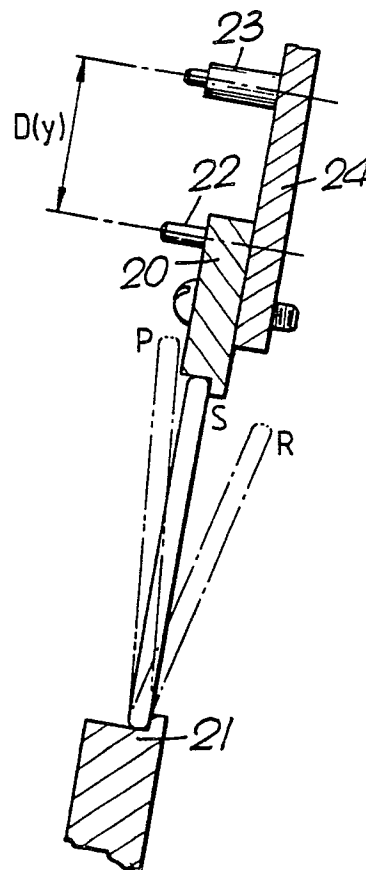


Fig. 4.

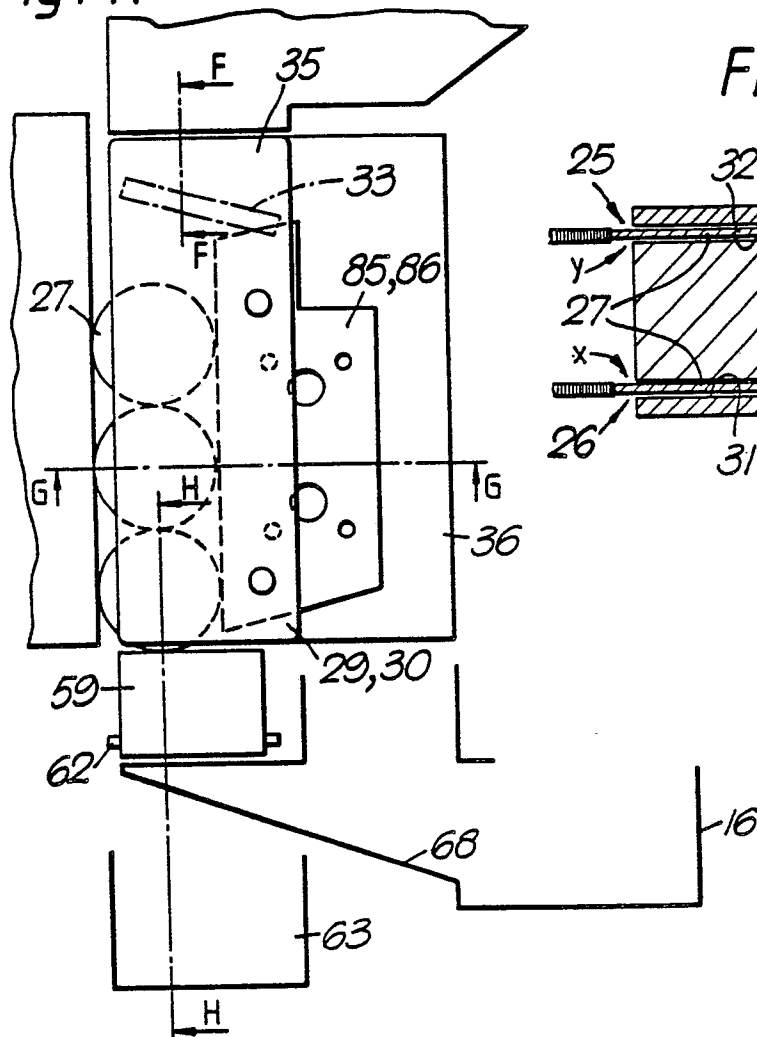


Fig. 5.

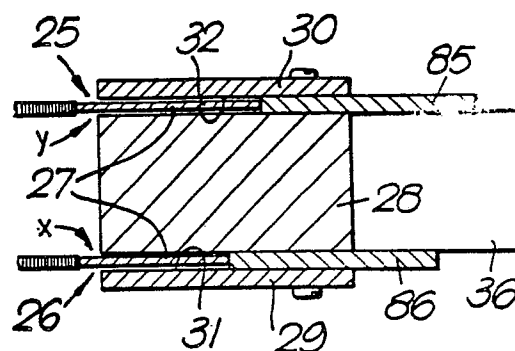


Fig. 6.

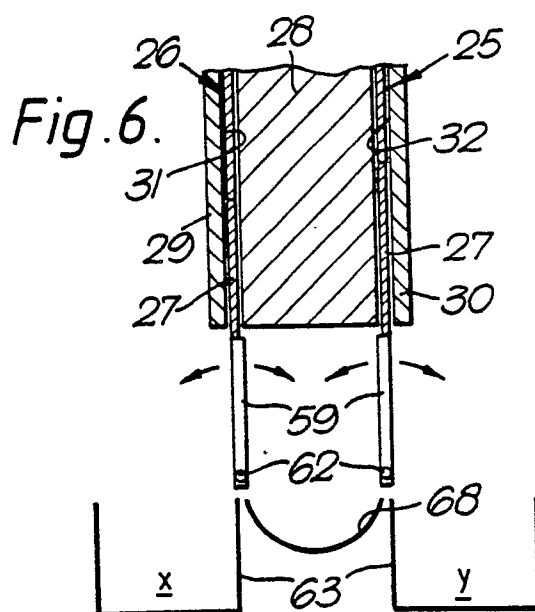


Fig. 7.

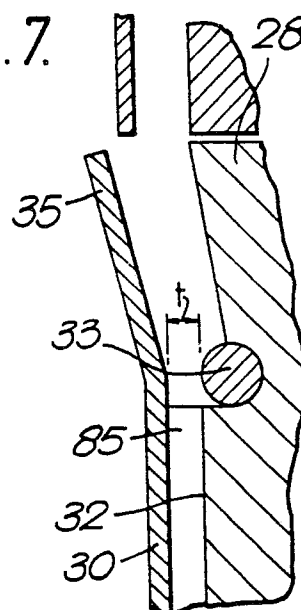
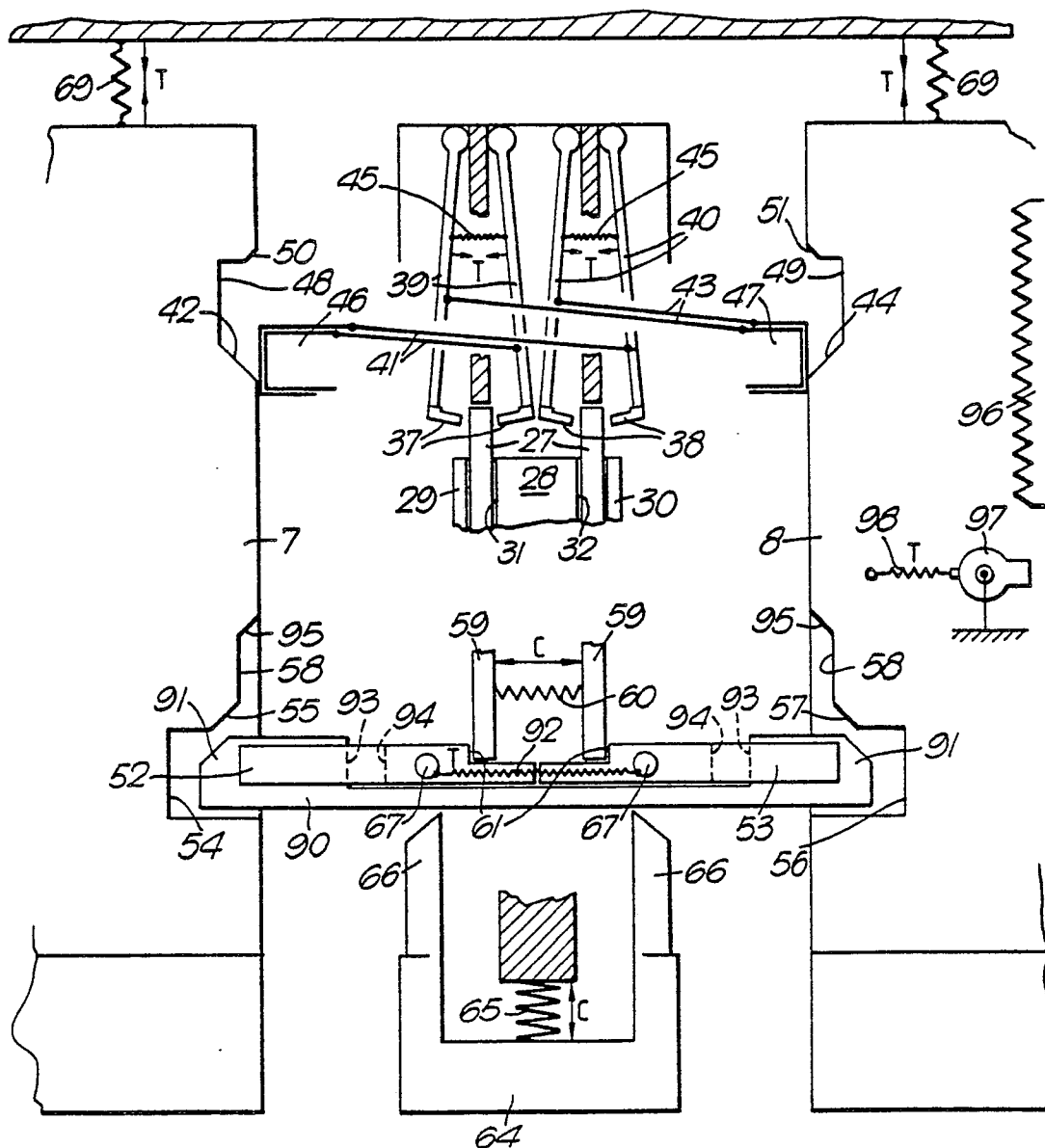


Fig. 8.



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Fig. 9.

